SAF-B03-015
Remaining Sites Confirmation
Sampling-Soil
FINAL VALIDATION PACKAGE

MAIL COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) MJP 8-30-05
INITIAL/DATE

SAF-B03-015 **100-D-13**

H3258

Sample Location/Waste Site: **100-D-13**

Date: 25 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Soil – Waste Site 100-D-13
Subject: Wet Chemistry - Data Package No. H3258-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3258-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Matrix/Media	Validation	Date
J03706	7/11/05	Soil	C	See note 1
J03707	7/11/05	Soil	C	See note 1
J03708	7/11/05	Soil	C	See note 1

1 – IC anions by 300.0, TPH by 418.1 and nitrate/nitrite by 353.2.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for bromide, chloride, sulfate, fluoride and nitrate/nitrite; and 48 hours for phosphate, nitrate and nitrite.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

Due to the holding time being exceeded by greater than two times the limit, all detected phosphate, nitrate and nitrite results were qualified as estimates and flagged "J".

Due to the holding time being exceeded by greater than two times the limit, all undetected phosphate, nitrate and nitrite results were rejected and flagged "UR".

All other holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J03708) was submitted for analysis. Nitrate, sulfate and nitrate/nitrite were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J".

Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (67.7%), all nitrate results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. H3258-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 74%.

MAJOR DEFICIENCIES

Due to the holding time being exceeded by greater than two times the limit, all undetected phosphate, nitrate and nitrite results were rejected and flagged "UR". Rejected data is unusable and should not be reported.

MINOR DEFICIENCIES

Due to the holding time being exceeded by greater than two times the limit, all detected phosphate, nitrate and nitrite results were qualified as estimates and flagged "J". Due to an RPD outside QC limits (67.7%), all nitrate results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H3258	REVIEWER: TLI	Project: 100-D-13	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrate	J	All	RPD
Nitrate Nitrite Phosphate	UR	All undetected analytes	Holding time
Nitrate Nitrite Phosphate	J	All detected analytes	Holding time

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD							
Laboratory: LLI	SDG: H3258						
Sample Number		J03706		J03707		J03708	
Remarks						E. Blank	
Sample Date		7/11/05		7/11/05		7/11/05	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q
Bromide		1.3	U	1.3	U	1.2	U
Chloride		1.4		1.3	U	1.2	U
Flouride		1.3	U	1.3	U	1.2	U
Nitrite		1.26	UR	1.33	UR	1.24	UR
Nitrate		27.5	J	1.33	UR	3.91	J
Phosphate		7.0	J	1.3	UR	1.2	UR
Sulfate	5	5.9		1.4		1.7	
Nitrate/nitrite		6.7		1.7		0.20	U
TPH		133	U	142	U	133	U

000010

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/21/05

CLIENT: TNUHANFORD B03-015 H3258 LVL LOT #: 0507L936
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J03706	% Solids	99.6		%	0.01	1.0
		Bromide by IC	1.3	u	MG/KG	1.3	1.0
		Chloride by IC	1.4		MG/KG	1.3	1.0
		Fluoride by IC	1.3	u	MG/KG	1.3	1.0
		Nitrite by IC	1.26	uR	MG/KG	1.26	1.0
		Nitrate by IC	27.5	J	MG/KG	1.26	1.0
		Phosphate by IC	7.0	J	MG/KG	1.3	1.0
		Sulfate by IC	5.9	J	MG/KG	1.3	1.0
		Nitrate Nitrite	6.7		MG/KG	0.20	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-002	J03707	% Solids	93.8		%	0.01	1.0
		Bromide by IC	1.3	u	MG/KG	1.3	1.0
		Chloride by IC	1.3	u	MG/KG	1.3	1.0
		Fluoride by IC	1.3	u	MG/KG	1.3	1.0
		Nitrite by IC	1.33	uR	MG/KG	1.33	1.0
		Nitrate by IC	1.33	uR	MG/KG	1.33	1.0
		Phosphate by IC	1.3	uR	MG/KG	1.3	1.0
		Sulfate by IC	1.4	J	MG/KG	1.3	1.0
		Nitrate Nitrite	1.7		MG/KG	0.21	1.0
		Petroleum Hydrocarbons	142	u	MG/KG	142	1.0
-003	J03708	% Solids	99.9		%	0.01	1.0
		Bromide by IC	1.2	u	MG/KG	1.2	1.0
		Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	1.2	u	MG/KG	1.2	1.0
		Nitrite by IC	1.24	uR	MG/KG	1.24	1.0
		Nitrate by IC	3.91	J	MG/KG	1.24	1.0
		Phosphate by IC	1.2	uR	MG/KG	1.2	1.0
		Sulfate by IC	1.7	J	MG/KG	1.2	1.0
		Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-017 H3258
LVL#: 0507L936

W.O.#: 11343-606-001-9999-00
Date Received: 07-12-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.

   LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate, Petroleum Hydrocarbons (PHC) and Nitrate Nitrite were within the 75-125% control limits.

8. The replicate analyses for Bromide, Fluoride, Nitrite, PHC and Nitrate Nitrite were within the 20% Relative Percent Difference (RPD) control limit however replicate analyses for Chloride, Nitrate, Phosphate and Sulfate were outside the control limit that may be attributed to sample inhomogeneity.

9. Results for solid samples are reported on a dry weight basis.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/25/05
Date

njp\i07-936

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B03-015-302 | Page 1 of 1

Collector: Stankovich/Gale	Company Contact: Lorna Dittmer / Telephone No. (509) 376-9664	Project Coordinator: KESSNER, JH
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 100-D-13	SAF No. B03-015
Ice Chest No. ERC 96-006	Field Logbook No. EL-1578-7 / COA C00D136700	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No. A050279	Bill of Lading/Air Bill No. See OSPC

Price Code 8C | Air Quality | Data Turnaround 7/15 Days

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: COOL 4°C

000014

			Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4°C
			Type of Container	G/P	G/P E	G/P	aG B	G/P D	aG A	G	G F	G/P G	G C
			No. of Container(s)	1	1	1	1	1	1	1	1	1	1
			Volume	1000mL	250mL	125mL	250mL	~~120mL~~ 125 CT	250mL	60mL	250mL	125mL	60ml
SAMPLE ANALYSIS				See item (1) in Special Instructions. PAP 7/11/05	See item (2) in Special Instructions.	Chromium Hex - 7196 PAP 7/11/05	PCBs - 8082; Pesticides - 8081; ~~Chloro-Herbicides - EPA8151~~	See item (3) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	NO2/NO3 - 353.2	VOA 8260A (TCL)
Sample No.	Matrix *	Sample Date	Sample Time										
1 J03706 3fb	SOIL	7/11/05	0929	X	X	X	X	X	X	X	X	X	X
2 J03707 8fb	SOIL	↓	1058	X	X	X	X	X	X		X	X	X
3 J03708 81	SOIL	↓	0906	X	X	X	X	X	X	X	X	X	X
~~J03709~~ CT 7/11/05	~~SOIL~~												
~~J03D20~~ CT 7/11/05	~~SOIL~~					SEE NOTE BELOW FOR VOA							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Chace / CTRICE	7/11/05 1145	PASTUSZYN	7/11/05 1145
PASTUSZYN	7/11/05 1145	Fed Ex	
Fed Ex	7-12-05 1015	[signature]	7-12-05 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241} ~~; Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 - Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}~~; Total Uranium

(2) ICP Metals - 6010TR (SW846) {~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}; Mercury - 7471 - (CV)

(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

Note. DO NOT RUN VOA Bottles

Matrix *: S=Soil, SE=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-13			DATA PACKAGE: H3258		
VALIDATOR: TLT		LAB: LCT		DATE: 8/19/05	
			SDG: H3258		
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MATRIX					
J03706 J03707 J03708					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

_____

_____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

_____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No (N/A)
ICB and CCB results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field blanks analyzed? (Levels C, D, E) ..... (Yes) No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes (No) N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: nitrate + sulfate in EB + NO_2/NO_3

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... (Yes) No N/A
Spike recoveries acceptable? ..... (Yes) No N/A
Sike standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
Spike standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: no pos

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes (No) N/A

Duplicate results acceptable? ..... Yes (No) N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)

MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)

Field duplicate RPD values acceptable? ..... Yes No (N/A)

Field split RPD values acceptable? ..... Yes No (N/A)

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: nitrate - 67.7% J all
~~sulfate - 51.7% J all~~ 8/1mc

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A

Sample holding times acceptable? ..... ~~Yes~~ (No) N/A

Comments: nitrate & nitrate + phosphate >2X - J/UK all

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... (Yes) No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No (N/A)

Samples properly prepared? (Levels D, E) ..... Yes No (N/A)

Detection limits meet RDL? ..... (Yes) No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/21/05

CLIENT: TNUHANFORD B03-015 H3258 LVL LOT #: 0507L936
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LICB52-MB1	Bromide by IC	1.2	u	MG/KG	1.2	1.0
		Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	1.2	u	MG/KG	1.2	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	05LN3038-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	05LHC042-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/21/05

CLIENT: TNUHANFORD B03-015 H3258 LVL LOT #: 0507L936

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J03706	Bromide by IC	51.2	0.0	50.2	102.0	2.0
		Chloride by IC	53.7	1.4	50.2	104.3	2.0
		Fluoride by IC	51.7	0.17	50.2	102.6	2.0
		Nitrite by IC	51.5	1.26u	50.2	102.7	2.0
		Nitrate by IC	81.8	27.5	50.2	108.0	2.0
		Phosphate by IC	58.1	7.0	50.2	101.8	2.0
		Sulfate by IC	57.2	5.9	50.2	102.4	2.0
-002	J03707	Petroleum Hydrocarbons	599	32.9	592	95.6	1.0
-003	J03708	Nitrate Nitrite	5.0	0.20u	5.0	100.6	1.0
BLANK10	05LICB52-MB1	Bromide by IC	24.1	1.2 u	25.0	96.5	1.0
		Chloride by IC	23.8	1.2 u	25.0	95.0	1.0
		Fluoride by IC	23.9	1.2 u	25.0	95.6	1.0
		Nitrite by IC	24.2	1.25u	25.0	96.8	1.0
		Nitrate by IC	24.2	1.25u	25.0	97.0	1.0
		Phosphate by IC	26.0	1.2 u	25.0	104.0	1.0
		Sulfate by IC	24.0	1.2 u	25.0	95.8	1.0
BLANK10	05LN3038-MB1	Nitrate Nitrite	5.0	0.20u	5.0	100	1.0
BLANK10	05LHC042-MB1	Petroleum Hydrocarbons	572	133 u	560	102.1	1.0

Lionville Laboratory, Inc.

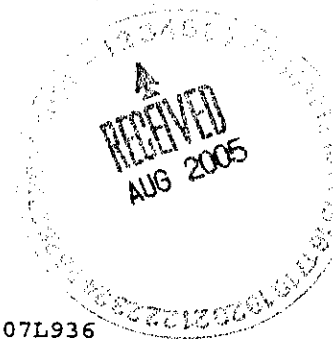
INORGANICS PRECISION REPORT 07/21/05

CLIENT: TNUHANFORD B03-015 H3258 LVL LOT #: 0507L936

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J03706	Bromide by IC	1.3 u	1.3 u	NC	1.0
		Chloride by IC	1.4	1.3 u	~~NC~~ 82.5	1.0
		Fluoride by IC	1.3 u	1.3 u	NC	1.0
		Nitrite by IC	1.26u	1.25u	NC	1.0
		Nitrate by IC	27.5	13.6	67.7	1.0
		Phosphate by IC	7.0	5.3	28.0	1.0
		Sulfate by IC	5.9	3.5	51.1	1.0
-002REP	J03707	Petroleum Hydrocarbons	142 u	142 u	NC	1.0
-003REP	J03708	Nitrate Nitrite	0.20u	0.20u	NC	1.0

mp 7-22-05



Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-015 H3258

DATE RECEIVED: 07/12/05 LVL LOT # :0507L936

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J03706						
% SOLIDS	001	S	05L%SA91	07/11/05	07/13/05	07/13/05
BROMIDE BY IC	001	S	05LICB52	07/11/05	07/18/05	07/18/05
BROMIDE BY IC	001 REP	S	05LICB52	07/11/05	07/18/05	07/18/05
BROMIDE BY IC	001 MS	S	05LICB52	07/11/05	07/18/05	07/18/05
CHLORIDE BY IC	001	S	05LICB52	07/11/05	07/18/05	07/18/05
CHLORIDE BY IC	001 REP	S	05LICB52	07/11/05	07/18/05	07/18/05
CHLORIDE BY IC	001 MS	S	05LICB52	07/11/05	07/18/05	07/18/05
FLUORIDE BY IC	001	S	05LICB52	07/11/05	07/18/05	07/18/05
FLUORIDE BY IC	001 REP	S	05LICB52	07/11/05	07/18/05	07/18/05
FLUORIDE BY IC	001 MS	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRITE BY IC	001	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRITE BY IC	001 REP	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRITE BY IC	001 MS	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRATE BY IC	001	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRATE BY IC	001 REP	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRATE BY IC	001 MS	S	05LICB52	07/11/05	07/18/05	07/18/05
PHOSPHATE BY IC	001	S	05LICB52	07/11/05	07/18/05	07/18/05
PHOSPHATE BY IC	001 REP	S	05LICB52	07/11/05	07/18/05	07/18/05
PHOSPHATE BY IC	001 MS	S	05LICB52	07/11/05	07/18/05	07/18/05
SULFATE BY IC	001	S	05LICB52	07/11/05	07/18/05	07/18/05
SULFATE BY IC	001 REP	S	05LICB52	07/11/05	07/18/05	07/18/05
SULFATE BY IC	001 MS	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRATE NITRITE	001	S	05LN3038	07/11/05	07/18/05	07/19/05
PETROLEUM HYDROCARBO	001	S	05LHC042	07/11/05	07/15/05	07/18/05
J03707						
% SOLIDS	002	S	05L%SA91	07/11/05	07/13/05	07/13/05
BROMIDE BY IC	002	S	05LICB52	07/11/05	07/18/05	07/18/05
CHLORIDE BY IC	002	S	05LICB52	07/11/05	07/18/05	07/18/05
FLUORIDE BY IC	002	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRITE BY IC	002	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRATE BY IC	002	S	05LICB52	07/11/05	07/18/05	07/18/05
PHOSPHATE BY IC	002	S	05LICB52	07/11/05	07/18/05	07/18/05
SULFATE BY IC	002	S	05LICB52	07/11/05	07/18/05	07/18/05

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-015 H3258

DATE RECEIVED: 07/12/05 LVL LOT # :0507L936

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	002	S	05LN3038	07/11/05	07/18/05	07/19/05
PETROLEUM HYDROCARBO	002	S	05LHC042	07/11/05	07/15/05	07/18/05
PETROLEUM HYDROCARBO	002 REP	S	05LHC042	07/11/05	07/15/05	07/18/05
PETROLEUM HYDROCARBO	002 MS	S	05LHC042	07/11/05	07/15/05	07/18/05
J03708						
% SOLIDS	003	S	05L%SA91	07/11/05	07/13/05	07/13/05
BROMIDE BY IC	003	S	05LICB52	07/11/05	07/18/05	07/18/05
CHLORIDE BY IC	003	S	05LICB52	07/11/05	07/18/05	07/18/05
FLUORIDE BY IC	003	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRITE BY IC	003	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRATE BY IC	003	S	05LICB52	07/11/05	07/18/05	07/18/05
PHOSPHATE BY IC	003	S	05LICB52	07/11/05	07/18/05	07/18/05
SULFATE BY IC	003	S	05LICB52	07/11/05	07/18/05	07/18/05
NITRATE NITRITE	003	S	05LN3038	07/11/05	07/18/05	07/19/05
NITRATE NITRITE	003 REP	S	05LN3038	07/11/05	07/18/05	07/19/05
NITRATE NITRITE	003 MS	S	05LN3038	07/11/05	07/18/05	07/19/05
PETROLEUM HYDROCARBO	003	S	05LHC042	07/11/05	07/15/05	07/18/05

LAB QC:

BROMIDE BY IC	MB1	S	05LICB52	N/A	07/18/05	07/18/05
BROMIDE BY IC	MB1 BS	S	05LICB52	N/A	07/18/05	07/18/05
CHLORIDE BY IC	MB1	S	05LICB52	N/A	07/18/05	07/18/05
CHLORIDE BY IC	MB1 BS	S	05LICB52	N/A	07/18/05	07/18/05
FLUORIDE BY IC	MB1	S	05LICB52	N/A	07/18/05	07/18/05
FLUORIDE BY IC	MB1 BS	S	05LICB52	N/A	07/18/05	07/18/05
NITRITE BY IC	MB1	S	05LICB52	N/A	07/18/05	07/18/05
NITRITE BY IC	MB1 BS	S	05LICB52	N/A	07/18/05	07/18/05
NITRATE BY IC	MB1	S	05LICB52	N/A	07/18/05	07/18/05
NITRATE BY IC	MB1 BS	S	05LICB52	N/A	07/18/05	07/18/05
PHOSPHATE BY IC	MB1	S	05LICB52	N/A	07/18/05	07/18/05
PHOSPHATE BY IC	MB1 BS	S	05LICB52	N/A	07/18/05	07/18/05
SULFATE BY IC	MB1	S	05LICB52	N/A	07/18/05	07/18/05
SULFATE BY IC	MB1 BS	S	05LICB52	N/A	07/18/05	07/18/05
NITRATE NITRITE	MB1	S	05LN3038	N/A	07/18/05	07/19/05
NITRATE NITRITE	MB1 BS	S	05LN3038	N/A	07/18/05	07/19/05

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B03-015 H3258

DATE RECEIVED: 07/12/05 LVL LOT # :0507L936

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PETROLEUM HYDROCARBO	MB1	S	05LHC042	N/A	07/15/05	07/18/05
PETROLEUM HYDROCARBO	MB1 BS	S	05LHC042	N/A	07/15/05	07/18/05

Date: 25 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Soil – Waste Site 100-D-13
Subject: Semivolatile - Data Package No. H3258-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3258-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03706	7/11/05	Soil	C	8270C
J03707	7/11/05	Soil	C	8270C
J03708	7/11/05	Soil	C	8270C

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the bis(2-ethylhexyl)phthalate and di-n-butylphthalate results in all samples were qualified as undetected, raised to the RDL and flagged "U".

Due to method blank contamination, the phenol results in sample J03706 was raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J03708) was submitted for analysis. Diethylphthalate was detected in the field blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J".

Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to LCS, matrix spike and matrix spike duplicate recoveries outside QC limits, all isophorone, 2,4-dimethylphenol, 1,2,4-trichlorobenzene, 4-chloro-3-methylphenol and 2-methylnaphthalene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Twenty-four analytes exceeded the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. H3258-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the bis(2-ethylhexyl)phthalate and di-n-butylphthalate results in all samples were qualified as undetected, raised to the RDL and flagged "U".

- Due to method blank contamination, the phenol results in sample J03706 was raised to the RQL, qualified as undetected and flagged "U".

- Due to LCS, matrix spike and matrix spike duplicate recoveries outside QC limits, all isophorone, 2,4-dimethylphenol, 1,2,4-trichlorobenzene, 4-chloro-3-methylphenol and 2-methylnaphthalene results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making

purposes. All other validated results are considered accurate within the standard error associated with the methods.
Twenty-four analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: H3258	REVIEWER: TLI	Project: 100-D-13	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
bis(2-Ethylhexyl)phthalate di-n-Butylphthalate	U at RQL	All	Blank contamination
phenol	U at RQL	J03706	Blank contamination
isophorone 2,4-dimethylphenol 1,2,4-trichlorobenzene 4-chloro-3-methylphenol 2-methylnaphthalene	J	All	LCS, MS/MSD recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD							
Laboratory: LLI	SDG: H3258						
Sample Number		J03706		J03707		J03708	
Remarks						E. Blank	
Sample Date		7/11/05		7/11/05		7/11/05	
Extraction Date		7/13/05		7/13/05		7/13/05	
Analysis Date		7/15/05		7/15/05		7/15/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q
Phenol	660	660	U	360	U	330	U
bis(2-Chloroethyl)ether	660	330	U	360	U	330	U
2-Chlorophenol	660	330	U	360	U	330	U
1,3-Dichlorobenzene	660	330	U	360	U	330	U
1,4-Dichlorobenzene	660	330	U	360	U	330	U
1,2-Dichlorobenzene	660	330	U	360	U	330	U
2-Methylphenol	660	330	U	360	U	330	U
2,2'-oxybis(1-chloropropane)	660	330	U	360	U	330	U
3 and/or 4-Methylphenol	660	330	U	360	U	330	U
N-Nitroso-di-n-propylamine	660	330	U	360	U	330	U
Hexachloroethane	660	330	U	360	U	330	U
Nitrobenzene	660	330	U	360	U	330	U
Isophorone	660	330	UJ	360	UJ	330	UJ
2-Nitrophenol	660	330	U	360	U	330	U
2,4-Dimethylphenol	660	330	UJ	360	UJ	330	UJ
bis(2-Chloroethoxy)methane	660	330	U	360	U	330	U
2,4-Dichlorophenol	660	330	U	360	U	330	U
1,2,4-Trichlorobenzene	660	330	UJ	360	UJ	330	UJ
Naphthalene	660	330	U	360	U	330	U
4-Chloroaniline	660	330	U	360	U	330	U
Hexachlorobutadiene	660	330	U	360	U	330	U
4-Chloro-3-methylphenol	660	330	UJ	360	UJ	330	UJ
2-Methylnaphthalene	660	330	UJ	360	UJ	330	UJ
Hexachlorocyclopentadiene	660	330	U	360	U	330	U
2,4,6-Trichlorophenol	660	330	U	360	U	330	U
2,4,5-Trichlorophenol*	660	840	U	890	U	830	U
2-Chloronaphthalene	660	330	U	360	U	330	U
2-Nitroaniline*	660	840	U	890	U	830	U
Dimethylphthalate	660	330	U	360	U	330	U
Acenaphthylene	660	330	U	360	U	330	U
2,6-Dinitrotoluene	660	330	U	360	U	330	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD							
Laboratory: LLI	SDG: H3258						
Sample Number		J03706		J03707		J03708	
Remarks						E. Blank	
Sample Date		7/11/05		7/11/05		7/11/05	
Extraction Date		7/13/05		7/13/05		7/13/05	
Analysis Date		7/15/05		7/15/05		7/15/05	
Semivolatile (8270C)/8015B	RQL	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	840	U	890	U	830	U
Acenaphthene	660	330	U	360	U	330	U
2,4-Dinitrophenol*	660	840	U	890	U	830	U
4-Nitrophenol*	660	840	U	890	U	830	U
Dibenzofuran	660	330	U	360	U	330	U
2,4-Dinitrotoluene	660	330	U	360	U	330	U
Diethylphthalate	660	330	U	360	U	78	
4-Chlorophenyl-phenyl ether	660	330	U	360	U	330	U
Fluorene	660	330	U	360	U	330	U
4-Nitroaniline*	660	840	U	890	U	830	U
4,6-Dinitro-2-methylphenol*	660	840	U	890	U	830	UJ
N-Nitrosodiphenylamine	660	330	U	360	U	330	U
4-Bromophenyl-phenyl ether	660	330	U	360	U	330	U
Hexachlorobenzene	660	330	U	360	U	330	U
Pentachlorophenol*	660	840	U	890	U	830	U
Phenanthrene	660	330	U	360	U	330	U
Anthracene	660	330	U	360	U	330	U
Carbazole	660	330	U	360	U	330	U
Di-n-butylphthalate	660	660	U	660	U	660	U
Fluoranthene	660	330	U	360	U	330	U
Pyrene	660	330	U	360	U	330	U
Butylbenzylphthalate	660	330	U	360	U	330	U
3,3'-Dichlorobenzidine	660	330	U	360	U	330	U
Benzo(a)anthracene	660	330	U	360	U	330	U
Chrysene	660	330	U	360	U	330	U
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U
Di-n-octylphthalate	660	330	U	360	U	330	U
Benzo(b)fluoranthene	660	330	U	360	U	330	U
Benzo(k)fluoranthene	660	330	U	360	U	330	UJ
Benzo(a)pyrene	660	330	U	360	U	330	U
Indeno(1,2,3-cd)pyrene	660	330	U	360	U	330	U
Dibenz(a,h)anthracene	660	330	U	360	U	330	U
Benzo(g,h,i)perylene	660	330	U	360	U	330	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List — Report Date: 07/21/05 13:15

RFW Batch Number: 0507L936 — Client: TNUHANFORD B03-015 H3258 — Work Order: 11343606001 — Page: 1a

	Cust ID:	J03706	J03707	J03707	J03707	J03708	SBLKME
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	05LE0578-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	59 %	53 %	48 %	48 %	61 %	61 %
	2-Fluorobiphenyl	67 %	44 %	72 %	73 %	64 %	65 %
	Terphenyl-d14	78 %	56 %	78 %	72 %	81 %	94 %
	Phenol-d5	65 %	61 %	74 %	71 %	67 %	67 %
	2-Fluorophenol	61 %	59 %	72 %	70 %	66 %	65 %
	2,4,6-Tribromophenol	67 %	53 %	79 %	81 %	69 %	71 %
		fl	fl	fl	fl	fl	fl
Phenol		660 U 8/22 JB U	360 U	74 %	74 %	330 U	22 J
bis(2-Chloroethyl)ether		330 U	360 U	76 %	74 %	330 U	330 U
2-Chlorophenol		330 U	360 U	76 %	75 %	330 U	330 U
1,3-Dichlorobenzene		330 U	360 U	75 %	74 %	330 U	330 U
1,4-Dichlorobenzene		330 U	360 U	72 %	72 %	330 U	330 U
1,2-Dichlorobenzene		330 U	360 U	77 %	76 %	330 U	330 U
2-Methylphenol		330 U	360 U	72 %	72 %	330 U	330 U
2,2'-oxybis(1-Chloropropane)		330 U	360 U	77 %	74 %	330 U	330 U
4-Methylphenol		330 U	360 U	70 %	65 %	330 U	330 U
N-Nitroso-di-n-propylamine		330 U	360 U	77 %	73 %	330 U	330 U
Hexachloroethane		330 U	360 U	72 %	70 %	330 U	330 U
Nitrobenzene		330 U	360 U	50 %	51 %	330 U	330 U
Isophorone		330 U J	360 U J	58 * %	57 * %	330 U J	330 U
2-Nitrophenol		330 U	360 U	51 %	56 %	330 U	330 U
2,4-Dimethylphenol		330 U J	360 U J	38 * %	40 * %	330 U J	330 U
bis(2-Chloroethoxy)methane		330 U	360 U	51 %	52 %	330 U	330 U
2,4-Dichlorophenol		330 U	360 U	50 %	55 %	330 U	330 U
1,2,4-Trichlorobenzene		330 U J	360 U J	51 * %	53 * %	330 U J	330 U
Naphthalene		330 U	360 U	52 %	52 %	330 U	330 U
4-Chloroaniline		330 U	360 U	63 %	63 %	330 U	330 U
Hexachlorobutadiene		330 U	360 U	56 %	56 %	330 U	330 U
4-Chloro-3-methylphenol		330 U J	360 U J	53 * %	55 * %	330 U J	330 U
2-Methylnaphthalene		330 U J	360 U J	52 * %	52 * %	330 U J	330 U
Hexachlorocyclopentadiene		330 U	360 U	47 %	51 %	330 U	330 U
2,4,6-Trichlorophenol		330 U	360 U	74 %	78 %	330 U	330 U
2,4,5-Trichlorophenol		840 U	890 U	76 %	81 %	830 U	830 U

*= Outside of EPA CLP QC limits.

8/24/05

0000013

RFW Batch Number: 0507L936 Client: TNUHANFORD B03-015 H3258 Work Order: 11343606001 Page: 1b

	Cust ID:	J03706	J03707	J03707	J03707	J03708	SBLKME
	RFW#:	001	002	002 MS	002 MSD	003	05LE0578-MB1
2-Chloronaphthalene		330 U	360 U	75 %	80 %	330 U	330 U
2-Nitroaniline		840 U	890 U	75 %	75 %	830 U	830 U
Dimethylphthalate		330 U	360 U	81 %	81 %	330 U	330 U
Acenaphthylene		330 U	360 U	78 %	75 %	330 U	330 U
2,6-Dinitrotoluene		330 U	360 U	84 %	80 %	330 U	330 U
3-Nitroaniline		840 U	890 U	85 %	86 %	830 U	830 U
Acenaphthene		330 U	360 U	77 %	78 %	330 U	330 U
2,4-Dinitrophenol		840 U	890 U	44 %	44 %	830 U	830 U
4-Nitrophenol		840 U	890 U	76 %	71 %	830 U	830 U
Dibenzofuran		330 U	360 U	77 %	80 %	330 U	330 U
2,4-Dinitrotoluene		330 U	360 U	84 %	86 %	330 U	330 U
Diethylphthalate		330 U	360 U	81 %	80 %	78 J	330 U
4-Chlorophenyl-phenylether		330 U	360 U	75 %	73 %	330 U	330 U
Fluorene		330 U	360 U	79 %	76 %	330 U	330 U
4-Nitroaniline		840 U	890 U	65 %	61 %	830 U	830 U
4,6-Dinitro-2-methylphenol		840 U	890 U	85 %	92 %	830 U	830 U
N-Nitrosodiphenylamine (1)		330 U	360 U	64 %	66 %	330 U	330 U
4-Bromophenyl-phenylether		330 U	360 U	67 %	70 %	330 U	330 U
Hexachlorobenzene		330 U	360 U	80 %	80 %	330 U	330 U
Pentachlorophenol		840 U	890 U	82 %	87 %	830 U	830 U
Phenanthrene		330 U	360 U	80 %	80 %	330 U	330 U
Anthracene		330 U	360 U	82 %	82 %	330 U	330 U
Carbazole		330 U	360 U	74 %	72 %	330 U	330 U
Di-n-butylphthalate		660 ~~64~~ JB U	660 ~~51~~ JB U	79 %	75 %	660 ~~180~~ JB U	64 J
Fluoranthene		330 U	360 U	83 %	81 %	330 U	330 U
Pyrene		330 U	360 U	79 %	73 %	330 U	330 U
Butylbenzylphthalate		330 U	360 U	83 %	76 %	330 U	330 U
3,3'-Dichlorobenzidine		330 U	360 U	89 %	87 %	330 U	330 U
Benzo(a)anthracene		330 U	360 U	81 %	80 %	330 U	330 U
Chrysene		330 U	360 U	82 %	79 %	330 U	330 U
bis(2-Ethylhexyl)phthalate		660 ~~45~~ JB U	660 ~~74~~ JB U	81 %	74 %	660 ~~72~~ JB U	62 J
Di-n-octyl phthalate		330 U	360 U	82 %	87 %	330 U	330 U
Benzo(b)fluoranthene		330 U	360 U	80 %	90 %	330 U	330 U
Benzo(k)fluoranthene		330 U	360 U	85 %	80 %	330 U	330 U
Benzo(a)pyrene		330 U	360 U	80 %	82 %	330 U	330 U
Indeno(1,2,3-cd)pyrene		330 U	360 U	82 %	86 %	330 U	330 U
Dibenz(a,h)anthracene		330 U	360 U	82 %	88 %	330 U	330 U
Benzo(g,h,i)perylene		330 U	360 U	78 %	82 %	330 U	330 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

000014

8/24/05

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List — Report Date: 07/21/05 13:15

RFW Batch Number: 0507L936 — Client: TNUHANFORD B03-015 H3258 — Work Order: 11343606001 — Page: 2a

Cust ID: **SBLKME BS**

Sample Information

RFW#: 05LE0578-MB1
Matrix: SOIL
D.F.: 1.00
Units: ug/Kg

Surrogate Recovery	Nitrobenzene-d5	48	%
	2-Fluorobiphenyl	76	%
	Terphenyl-d14	81	%
	Phenol-d5	77	%
	2-Fluorophenol	76	%
	2,4,6-Tribromophenol	84	%

Phenol		76	%
bis(2-Chloroethyl)ether		77	%
2-Chlorophenol		78	%
1,3-Dichlorobenzene		79	%
1,4-Dichlorobenzene		76	%
1,2-Dichlorobenzene		79	%
2-Methylphenol		74	%
2,2'-oxybis(1-Chloropropane)		78	%
4-Methylphenol		71	%
N-Nitroso-di-n-propylamine		77	%
Hexachloroethane		75	%
Nitrobenzene		50	%
Isophorone		57 *	%
2-Nitrophenol		51	%
2,4-Dimethylphenol		36 *	%
bis(2-Chloroethoxy)methane		51	%
2,4-Dichlorophenol		51	%
1,2,4-Trichlorobenzene		52 *	%
Naphthalene		53	%
4-Chloroaniline		63	%
Hexachlorobutadiene		56	%
4-Chloro-3-methylphenol		53 *	%
2-Methylnaphthalene		52 *	%
Hexachlorocyclopentadiene		38	%
2,4,6-Trichlorophenol		77	%
2,4,5-Trichlorophenol		79	%

*= Outside of EPA CLP QC limits.

8/24/05

000015

RFW#: 05LE0578-MB1

2-Chloronaphthalene	78	%
2-Nitroaniline	77	%
Dimethylphthalate	82	%
Acenaphthylene	79	%
2,6-Dinitrotoluene	85	%
3-Nitroaniline	87	%
Acenaphthene	79	%
2,4-Dinitrophenol	41	%
4-Nitrophenol	72	%
Dibenzofuran	80	%
2,4-Dinitrotoluene	84	%
Diethylphthalate	82	%
4-Chlorophenyl-phenylether	76	%
Fluorene	79	%
4-Nitroaniline	60	%
4,6-Dinitro-2-methylphenol	84	%
N-Nitrosodiphenylamine (1)	68	%
4-Bromophenyl-phenylether	72	%
Hexachlorobenzene	84	%
Pentachlorophenol	85	%
Phenanthrene	83	%
Anthracene	85	%
Carbazole	72	%
Di-n-butylphthalate	79	%
Fluoranthene	84	%
Pyrene	82	%
Butylbenzylphthalate	85	%
3,3'-Dichlorobenzidine	87	%
Benzo(a)anthracene	83	%
Chrysene	84	%
bis(2-Ethylhexyl)phthalate	81	%
Di-n-octyl phthalate	90	%
Benzo(b)fluoranthene	81	%
Benzo(k)fluoranthene	90	%
Benzo(a)pyrene	82	%
Indeno(1,2,3-cd)pyrene	80	%
Dibenz(a,h)anthracene	81	%
Benzo(g,h,i)perylene	75	%

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

8/24/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B03-015
LVL #: 0507L936
SDG/SAF # H3258/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 07-12-2005

SEMIVOLATILE

Three (3) solid samples were collected on 07-11-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 07-13-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 07-15-2005.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within acceptance criteria.
5. Ten (10) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria.

   Five (5) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. The method blank contained the common laboratory contaminants Bis (2-Ethylhexy) phthalate and Di-n-butylphthalate at levels less than the CRQL. The method blank also contained the target compound Phenol at a level less than the CRQL.
7. Internal standard area criteria were not met for the matrix spike duplicate J03707 MSD. The GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly.
8. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
9. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
10. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/26/05
Date

000018

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 05MS244

Initiator: SS
Date: 7-19-05
Client: TNX-Hanford

Batch: 0507L936
Samples: 001-005
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: Solid
Prep Batch: 05LE057F

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

several low spike recoveries in the matrix spike, matrix spikedup + blankspike

2. Known or Probable Causes(s)

loss during extraction

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

narrate

4. Project Manager Instructions...signature/date: 7/20/05

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 7/25/05 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

Bechtel Hanford Inc. — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — B03-015-302 — Page 1 of 1

Collector: Stankovich/Gale	Company Contact: Lorna Dittmer; Telephone No. (509) 376-9664	Project Coordinator: KESSNER, JH	Price Code 8C; Data Turnaround 7/15 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 100-D-13	SAF No. B03-015	Air Quality [ ]
Ice Chest No. ERC-96-006	Field Logbook No. EL-1578-7; COA C00D136700	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No. A050279	Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

COOL 4°C

000020

			Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4°C
			Type of Container	G/P	G/P E	G/P	aG B	G/P D	aG A	G	G F	G/P G	4 C
			No. of Container(s)	1	1	1	1	1	1	1	1	1	1
			Volume	1000mL	250mL	125mL	250mL	~~120mL~~ 125 CT	250mL	60mL	250mL	125mL	60ml
SAMPLE ANALYSIS				See item (1) in Special Instructions. DAP 7/11/05	See item (2) in Special Instructions.	Chromium Hex - 7196 DAP 7/11/05	PCBs - 8082; Pesticides - 8081; ~~Chloro-Herbicides - EPA8151~~	See item (3) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	NO2/NO3 - 353.2	VOA 8260A (TCL)
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**										
1 J03706 3fb	SOIL	7/11/05	0929	X	X	X	X	X	X	X	X	X	X
2 J03707 Bfb	SOIL	↓	1056	X	X	X	X	X	X		X	X	X
3 J03708 BI	SOIL	↓	0906	X	X	X	X	X	X	X	X	X	X
~~J03709~~ CT 7/11/05	~~SOIL~~												
~~J03D20~~ CT 7/11/05	~~SOIL~~						SEE NOTE BELOW FOR VOA						

(VOA 8260A column crossed out, initialed 7/11/05; Hex Chromium and item (1) columns crossed out)

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
C. Price / CTRICE	7/11/05 1145	DAS / JOHNER	7/11/05 1145
DAS / JOHNER	7/11/05 1145	Fed Ex	
Fed Ex	7-12-05 1015	[signature]	7-12-05 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; ~~Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}~~; Total Uranium (DAP 7/11/05)
(2) ICP Metals - 6010TR (SW846) {~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}; Mercury - 7471 - (CV)
(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

Note.
DO NOT RUN VOA Bottles

Matrix *: S=Soil, SE=Sediment, SO=Solid, SI=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-13			DATA PACKAGE: H3258		
VALIDATOR: TLI		LAB: LLI		DATE: 8/19/05	
			SDG: H3258		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J03706 J03707 J03708					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... Yes (No) N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... (Yes) No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes (No) N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: di-n-butylphthalate + bis(2-ethylhexyl)phthalate U at RQL - all phenol - U 706 at RQL

FB - diethylphthalate in FB

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... (Yes) No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... Yes (No) N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)

Comments: MS/MSD - Soil - J all + LCS isophorone, 2,4-dimethylphenol 1,2,4 trichlorobenzene 4-chloro-3-methylphenol 2-methylnaphthalene

no PAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD RPD values acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A
Iinternal standard areas acceptable? ..... Yes No N/A
Internal standard retention times acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A
Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A
Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	(N/A)
Compound quantitation acceptable? (Levels D, E)	Yes	No	(N/A)
Results reported for all requested analyses?	(Yes)	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	(N/A)
Samples properly prepared? (Levels D, E)	Yes	No	(N/A)
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes	No	(N/A)
Detection limits meet RDL?	Yes	(No)	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(N/A)

Comments: 24 over

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed?	Yes	No	(N/A)
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:

Date: 25 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Soil – Waste Site 100-D-13
Subject: Inorganics - Data Package No. H3258-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3258-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03706	7/11/05	Soil	C	See note 1
J03707	7/11/05	Soil	C	See note 1
J03708	7/11/05	Soil	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

Due to method blank contamination, the chromium and vanadium results in sample J03708 were qualified as estimates and flagged "UJ".

Due to method blank contamination, all molybdenum result in samples J03706 and J03707 were qualified as estimates and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J03708) was submitted for analysis. Barium, beryllium, manganese and zinc were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR".

Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (55.9%), all antimony results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. H3258-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the chromium and vanadium results in sample J03708 were qualified as estimates and flagged "UJ".

- Due to method blank contamination, all molybdenum result in samples J03706 and J03707 were qualified as estimates and flagged "UJ".

- Due to a matrix spike recovery outside QC limits (55.9%), all antimony results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: H3258	REVIEWER: TH	Project: 100-D-13	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chromium, Vanadium	UJ	J03708	Method blank contamination
Molybdenum	UJ	J03706, J03707	Method blank contamination
Antimony	J	All	MS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD							
Laboratory: LLI	SDG: H3258						
Sample Number		J03706		J03707		J03708	
Remarks						E. Blank	
Sample Date		7/11/05		7/11/05		7/11/05	
Inorganics	RQL	Result	Q	Result	Q	Result	Q
Silver	0.2	0.09	U	0.09	U	0.09	U
Arsenic	10	3.1		1.4		0.43	U
Boron		4.9		0.23	U	0.22	U
Barium	2	70.6		42.8		1.1	
Beryllium		0.60		1.0		0.02	
Cadmium	0.2	0.06		0.03	U	0.03	U
Cobalt		5.4		7.0		0.09	U
Chromium	1	8.7		4.7		0.27	UJ
Copper		13.3		13.4		0.08	U
Mercury	0.2	0.01	U	0.02	U	0.01	U
Manganese		259		252		2.2	
Molybdenum		0.68	UJ	0.58	UJ	0.15	U
Nickel		9.4		8.0		0.21	U
Lead	5	6.3		2.7		0.24	U
Antimony	0.6	0.38	UJ	0.40	UJ	0.38	UJ
Selenium	1	0.47	U	0.49	U	0.47	U
Vanadium		29.9		46.4		0.16	UJ
Zinc	1	122		43.3		2.9	

000010

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/19/05

CLIENT: TNU-HANFORD B03-015 H3258 LVL LOT #: 0507L936

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J03706	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	3.1	MG/KG	0.43	1.0
		Boron, Total	4.9	MG/KG	0.22	1.0
		Barium, Total	70.6	MG/KG	0.02	1.0
		Beryllium, Total	0.60	MG/KG	0.01	1.0
		Cadmium, Total	0.06	MG/KG	0.03	1.0
		Cobalt, Total	5.4	MG/KG	0.09	1.0
		Chromium, Total	8.7	MG/KG	0.07	1.0
		Copper, Total	13.3	MG/KG	0.08	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	259	MG/KG	0.02	1.0
		Molybdenum, Total	0.68 UJ	MG/KG	0.15	1.0
		Nickel, Total	9.4	MG/KG	0.21	1.0
		Lead, Total	6.3	MG/KG	0.24	1.0
		Antimony, Total	0.38 uJ	MG/KG	0.38	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Vanadium, Total	29.9	MG/KG	0.06	1.0
		Zinc, Total	122	MG/KG	0.05	1.0
-002	J03707	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	1.4	MG/KG	0.45	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	42.8	MG/KG	0.02	1.0
		Beryllium, Total	1.0	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	7.0	MG/KG	0.09	1.0
		Chromium, Total	4.7	MG/KG	0.07	1.0
		Copper, Total	13.4	MG/KG	0.08	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	252	MG/KG	0.02	1.0
		Molybdenum, Total	0.58 UJ	MG/KG	0.16	1.0
		Nickel, Total	8.0	MG/KG	0.22	1.0
		Lead, Total	2.7	MG/KG	0.25	1.0
		Antimony, Total	0.40 uJ	MG/KG	0.40	1.0
		Selenium, Total	0.49 u	MG/KG	0.49	1.0
		Vanadium, Total	46.4	MG/KG	0.06	1.0
		Zinc, Total	43.3	MG/KG	0.05	1.0

8/24/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/19/05

CLIENT: TNU-HANFORD B03-015 LVL LOT #: 0507L936

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J03708	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	0.43 u	MG/KG	0.43	1.0
		Boron, Total	0.22 u	MG/KG	0.22	1.0
		Barium, Total	1.1	MG/KG	0.02	1.0
		Beryllium, Total	0.02	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.09 u	MG/KG	0.09	1.0
		Chromium, Total	0.27 UJ	MG/KG	0.07	1.0
		Copper, Total	0.08 u	MG/KG	0.08	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	2.2	MG/KG	0.02	1.0
		Molybdenum, Total	0.15 u	MG/KG	0.15	1.0
		Nickel, Total	0.21 u	MG/KG	0.21	1.0
		Lead, Total	0.24 u	MG/KG	0.24	1.0
		Antimony, Total	0.38 uJ	MG/KG	0.38	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Vanadium, Total	0.16 UJ	MG/KG	0.06	1.0
		Zinc, Total	2.9	MG/KG	0.05	1.0

8/24/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-015
LVL#: 0507L936
SDG/SAF#: H3258/B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 07-12-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Chromium was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and samples J03707 and J03708 read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J03706	Manganese	2,000	104.9
	Antimony	100	101.7

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/25/00
Date

jjw/m07-936

05072936

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-302	Page 1 of 1

Collector: Stankovich/Gale	Company Contact: Lorna Dittmer; Telephone No. (509) 376-9664	Project Coordinator: KESSNER, JH	Price Code 8C; Data Turnaround 7/15 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 100-D-13	SAF No. B03-015	Air Quality
Ice Chest No. ERC-96-006	Field Logbook No. EL-1578-7; COA C00D136700	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No. A050279	Bill of Lading/Air Bill No. See 05/C	

POSSIBLE SAMPLE ~~HAZARDS/~~REMARKS

None

Special Handling and/or Storage

COOL 4°C

000016

Preservation				None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4°C
Type of Container				G/P	G/P E	G/P	aG B	G/P D	aG A	G	G F	G/P G	4 C
No. of Container(s)				1	1	1	1	1	1	1	1	1	1
Volume				1000mL	250mL	125mL	250mL	~~120mL~~ 125 ct	250mL	60mL	250mL	125mL	60ml
SAMPLE ANALYSIS				See item (1) in Special Instructions. DAP 7/11/05	See item (2) in Special Instructions.	Chromium Hex 7196 DAP 7/11/05	PCBs - 8082; Pesticides - 8081; ~~Chloro-Herbicides - EPA8151~~	See item (3) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL) CT 7/11/05	TPH (Total) - 418.1	NO2/NO3 - 353.2	VOA 8260A (TCL)
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**										
1 J03706 3fb	SOIL	7/11/05	0929	X	X	X	X	X	X	X	X	X	X
2 J03707 8fb	SOIL	↓	1050	X	X	X	X	X	X		X	X	X
3 J03708 31	SOIL	↓	0906	X	X	X	X	X	X	X	X	X	X
~~J03709~~ CT 7/11/05	~~SOIL~~												
~~J03D20~~ CT 7/11/05	~~SOIL~~							SEE NOTE BELOW FOR VOA					

CHAIN OF POSSESSION	Date/Time	Sign/Print Names Received By/Stored In	Date/Time
Relinquished By/Removed From: [signature] / CTRICE	7/11/05 1145	DAS TJOYNER [signature]	7/11/05 1145
Relinquished By/Removed From: DAS TJOYNER [signature]	7/11/05 1145	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: FedEx	7-12-05 1015	Received By/Stored In: [signature]	7-12-05 1015
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}~~; Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}~~; Total Uranium DAP 7/11/05

(2) ICP Metals - 6010TR (SW846) {~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}; Mercury - 7471 - (CV)

(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

Note.
DO NOT RUN VOA Bottles

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-13			DATA PACKAGE: H3258		
VALIDATOR: TLT		LAB: LLI		DATE: 8/19/05	
			SDG: H3258		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J03706 J03707 J03708					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) .... Yes No (N/A)

ICB and CCB results acceptable? (Levels D, E) .... Yes No (N/A)

Laboratory blanks analyzed? .... (Yes) No N/A

Laboratory blank results acceptable? .... Yes (No) N/A

Field blanks analyzed? (Levels C, D, E) .... (Yes) No N/A

Field blank results acceptable? (Levels C, D, E) .... Yes (No) N/A

Transcription/calculation errors? (Levels D, E) .... Yes No (N/A)

Comments: Cr 708 UJ moly UJ 706 + 707
vanadium

— FB ~~silver~~ barium ~~manganese~~ ~~cobalt~~ manganese zinc beryllium

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? .... (Yes) No N/A

MS/MSD results acceptable? .... Yes (No) N/A

MS/MSD standards NIST traceable? (Levels D, E) .... Yes No (N/A)

MS/MSD standards expired? (Levels D, E) .... Yes No (N/A)

LCS/BSS samples analyzed? .... (Yes) No N/A

LCS/BSS results acceptable? .... (Yes) No N/A

Standards traceable? (Levels D, E) .... Yes No (N/A)

Standards expired? (Levels D, E) .... Yes No (N/A)

Transcription/calculation errors? (Levels D, E) .... Yes No (N/A)

Performance audit sample(s) analyzed? .... Yes (No) N/A

Performance audit sample results acceptable? .... Yes No (N/A)

Comments: antimony MS – 55.9% J all no PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?	Yes	No	N/A
Duplicate results acceptable?	Yes	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)	Yes	No	N/A
Field duplicate RPD values acceptable?	Yes	No	N/A
Field split RPD values acceptable?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments:_____

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed?	Yes	No	N/A
ICP serial dilution %D values acceptable?	Yes	No	N/A
ICP post digestion spike required?	Yes	No	N/A
ICP post digestion spike values acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No N/A
Duplicate injection %RSD values acceptable? ..... Yes No N/A
Analytical spikes performed as required? ..... Yes No N/A
Analytical spike recoveries acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
MSA performed as required? ..... Yes No N/A
MSA results acceptable? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A

Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... (Yes) No N/A

Rresults supported in the raw data? (Levels D, E) ..... Yes No (N/A)

Samples properly prepared? (Levels D, E) ..... Yes No (N/A)

Detection limits meet RDL? ..... (Yes) No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

_____

_____

_____

_____

_____

_____

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/19/05

CLIENT: TNU-HANFORD B03-015 LVL LOT #: 0507L936

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	05L0402-MB1	Silver, Total	0.17	MG/KG	0.09	1.0
		Arsenic, Total	0.45 u	MG/KG	0.45	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.09 u	MG/KG	0.09	1.0
		Chromium, Total	0.27	MG/KG	0.07	1.0
		Copper, Total	0.08 u	MG/KG	0.08	1.0
		Manganese, Total	0.03	MG/KG	0.02	1.0
		Molybdenum, Total	0.31	MG/KG	0.16	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Lead, Total	0.25 u	MG/KG	0.25	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.49 u	MG/KG	0.49	1.0
		Vanadium, Total	0.10	MG/KG	0.06	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	05C0179-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/19/05

CLIENT: TNU-HANFORD B03-015 LVL LOT #: 0507L936

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J03706	Silver, Total	4.5	0.09u	4.8	93.8	1.0
		Arsenic, Total	181	3.1	191	92.9	1.0
		Boron, Total	91.9	4.9	95.6	91.0	1.0
		Barium, Total	257	70.6	191	97.5	1.0
		Beryllium, Total	5.3	0.60	4.8	97.8	1.0
		Cadmium, Total	4.5	0.06	4.8	92.4	1.0
		Cobalt, Total	49.9	5.4	47.8	93.1	1.0
		Chromium, Total	27.6	8.7	19.1	99.0	1.0
		Copper, Total	37.6	13.3	23.9	101.7	1.0
		Mercury, Total	0.15	0.01u	0.14	110.3	1.0
		Manganese, Total	320	259	47.8	127.6*	1.0
		Molybdenum, Total	89.4	0.68	95.6	92.8	1.0
		Nickel, Total	57.8	9.4	47.8	101.3	1.0
		Lead, Total	51.1	6.3	47.8	93.7	1.0
		Antimony, Total	26.7	0.38u	47.8	55.9	1.0
		Selenium, Total	175	0.47u	191	91.5	1.0
		Vanadium, Total	77.4	29.9	47.8	99.4	1.0
		Zinc, Total	165	122	47.8	88.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/19/05

CLIENT: TNU-HANFORD B03-015 LVL LOT #: 0507L936

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J03706	Silver, Total	0.09u	0.09u	NC	1.0
		Arsenic, Total	3.1	3.0	3.3	1.0
		Boron, Total	4.9	3.5	33.3	1.0
		Barium, Total	70.6	70.0	0.85	1.0
		Beryllium, Total	0.60	0.66	9.1	1.0
		Cadmium, Total	0.06	0.05	24.3	1.0
		Cobalt, Total	5.4	5.5	1.8	1.0
		Chromium, Total	8.7	9.6	9.8	1.0
		Copper, Total	13.3	13.4	0.75	1.0
		Mercury, Total	0.01u	0.01u	NC	1.0
		Manganese, Total	259	264	2.1	1.0
		Molybdenum, Total	0.68	0.64	7.1	1.0
		Nickel, Total	9.4	13.6	36.5	1.0
		Lead, Total	6.3	6.1	3.2	1.0
		Antimony, Total	0.38u	0.39u	NC	1.0
		Selenium, Total	0.47u	0.47u	NC	1.0
		Vanadium, Total	29.9	33.0	9.9	1.0
		Zinc, Total	122	121	1.6	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/19/05

CLIENT: TNU-HANFORD B03-015 LVL LOT #: 0507L936

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	05L0402-LC1	Silver, LCS	49.7	50.0	MG/KG	99.4
		Arsenic, LCS	960	1000	MG/KG	96.0
		Boron, LCS	490	500	MG/KG	98.0
		Barium, LCS	493	500	MG/KG	98.6
		Beryllium, LCS	24.9	25.0	MG/KG	99.6
		Cadmium, LCS	24.6	25.0	MG/KG	98.4
		Cobalt, LCS	248	250	MG/KG	99.1
		Chromium, LCS	50.0	50.0	MG/KG	100
		Copper, LCS	125	125	MG/KG	100.3
		Manganese, LCS	76.2	75.0	MG/KG	101.6
		Molybdenum, LCS	492	500	MG/KG	98.4
		Nickel, LCS	197	200	MG/KG	98.7
		Lead, LCS	244	250	MG/KG	97.8
		Antimony, LCS	288	300	MG/KG	96.2
		Selenium, LCS	953	1000	MG/KG	95.3
		Vanadium, LCS	250	250	MG/KG	99.9
		Zinc, LCS	98.2	100	MG/KG	98.2
LCS1	05C0179-LC1	Mercury, LCS	6.5	6.2	MG/KG	105.0

Date: 25 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Soil – Waste Site 100-D-13
Subject: Radiochemistry - Data Package No. H3258-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3258-EB prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03706	7/11/05	Soil	C	See note 1
J03707	7/11/05	Soil	C	See note 1
J03708	7/11/05	Soil	C	See note 1

1 – Gross alpha, gross beta, total uranium and gamma spectroscopy.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J03708) was submitted for analysis. Gross alpha, gross beta, total uranium, potassium-40, radium-226, radium-228, thorium-228 and thorium-232 were detected in the field blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate

analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (35%), all thorium-232 results were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicates

No field duplicates were submitted for analysis.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Six analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H3258 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD outside QC limits (35%), all thorium-232 results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated

with the methods.

Six analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H3258	REVIEWER: TLI	Project: 100-D-13	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Thorium-232	J	All	RPD

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

RADIOCHEMISTRY ANALYSIS, SOIL MATRIX, (PCi/G)

Project: BECHTEL-HANFORD							
Laboratory: EB	SDG: H3258						
Sample Number		J03706		J03707		J03708	
Remarks						E. Blank	
Sample Date		7/11/05		7/11/05		7/11/05	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q
Gross Alpha		7.45		8.47		2.70	
Gross Beta		17.8		29.3		5.51	
Total Uranium (ug/g)		1.42		1.50		0.554	
Potassium-40		9.28		11.7		4.15	
Cobalt 60	0.05	U	U	U	U	U	U
Cesium 137	0.05	0.200		U	U	U	U
Radium-226		0.377		0.470		0.104	
Radium-228		0.685		0.507		0.198	
Europium 152	0.1	U	U*	U	U	U	U
Europium 154	0.1	U	U*	U	U*	U	U*
Europium 155	0.1	U	U*	U	U*	U	U
Thorium-228		0.904		0.563		0.249	
Thorium-232		0.685	J	0.507	J	0.198	J
Uranium-235(gea)		U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U

000010

* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-01 J03706

DATA SHEET

SDG	7860	Client/Case no	Hanford SDG H3258
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R507075-01	Client sample id	J03706
Dept sample id	7860-001	Location/Matrix	100-D-13 SOLID
Received	07/12/05	Collected/Weight	07/11/05 09:29 1285 g
% solids	99.3	Custody/SAF No	B03-015-302 B03-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	7.45	3.7	3.0	10		93A
Gross Beta	12587-47-2	17.8	4.2	5.6	15		93B
Total Uranium (ug/g)	7440-61-1	1.42	0.16	0.010	1.0		U_T
Potassium 40	13966-00-2	9.28	0.60	0.32			GAM
Cobalt 60	10198-40-0	U		0.038	0.050	U	GAM
Cesium 137	10045-97-3	0.200	0.039	0.040	0.10		GAM
Radium 226	13982-63-3	0.377	0.076	0.078	0.10		GAM
Radium 228	15262-20-1	0.685	0.19	0.19	0.20		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	0.904	0.11	0.086			GAM
Thorium 232	TH-232	0.685	0.19	0.19		J	GAM
Uranium 235	15117-96-1	U		0.21		U	GAM
Uranium 238	U-238	U		4.9		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM

Remaining Sites Confrm.Sampling-Soil

8/24/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-02 J03707

DATA SHEET

SDG	7860	Client/Case no	Hanford SDG H3258
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R507075-02	Client sample id	J03707
Dept sample id	7860-002	Location/Matrix	100-D-13 SOLID
Received	07/12/05	Collected/Weight	07/11/05 10:50 1428 g
% solids	96.3	Custody/SAF No	B03-015-302 B03-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	8.47	3.7	3.9	10		93A
Gross Beta	12587-47-2	29.3	4.8	5.7	15		93B
Total Uranium (ug/g)	7440-61-1	1.50	0.17	0.010	1.0		U_T
Potassium 40	13966-00-2	11.7	0.83	0.29			GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	U		0.037	0.10	U	GAM
Radium 226	13982-63-3	0.470	0.084	0.079	0.10		GAM
Radium 228	15262-20-1	0.507	0.19	0.21	0.20		GAM
Europium 152	14683-23-9	U		0.092	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	0.563	0.045	0.044			GAM
Thorium 232	TH-232	0.507	0.19	0.21		J	GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		5.3		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

Remaining Sites Confrm.Sampling-Soil

8/24/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/22/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-03 J03708

DATA SHEET

SDG 7860	Client/Case no Hanford	SDG H3258	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R507075-03	Client sample id J03708		
Dept sample id 7860-003	Location/Matrix 100-D-13	SOLID	
Received 07/12/05	Collected/Weight 07/11/05 09:06	1437 g	
% solids 100.0	Custody/SAF No B03-015-302	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	2.70	1.9	2.6	10		93A
Gross Beta	12587-47-2	5.51	3.3	5.3	15		93B
Total Uranium (ug/g)	7440-61-1	0.554	0.062	0.010	1.0		U_T
Potassium 40	13966-00-2	4.15	0.45	0.34			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Radium 226	13982-63-3	0.104	0.044	0.052	0.10		GAM
Radium 228	15262-20-1	0.198	0.097	0.11	0.20		GAM
Europium 152	14683-23-9	U		0.088	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.057	0.10	U	GAM
Thorium 228	14274-82-9	0.249	0.043	0.037			GAM
Thorium 232	TH-232	0.198	0.097	0.11		J	GAM
Uranium 235	15117-96-1	U		0.094		U	GAM
Uranium 238	U-238	U		3.8		U	GAM
Americium 241	14596-10-2	U		0.040		U	GAM

Remaining Sites Confrm.Sampling-Soil

8/24/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/22/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H3258 was composed of three solid (soil) samples designated under SAF No. B03-015 with a Project Designation of: Remaining Sites Confirmation Sampling-Soil and a Sampling Location of: 100-D-13.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-mail on July 22, 2005.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Total Uranium Analysis

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Mel Mannion — 7/22/5

Melissa C. Mannion
Senior Program Manager

Date

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-302	Page 1 of 1
Collector: Stankovich/Gale	Company Contact: Lorna Dittmer; Telephone No.: (509) 376-9664	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 100-D-13 H3258 (7860)	SAF No.: B03-015	Air Quality: [ ]
Ice Chest No.: ERC-95-027	Field Logbook No.: EL-1578-7; COA: C00D136700	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050283	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: None

0000016

SAMPLE ANALYSIS	Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
	Type of Container	G/P	G/P	G/P	aG	G/P	aG	G	G	G/P	G
	No. of Container(s)	1	1	1	1	1	1	1	1	1	
	Volume	1000mL	250mL	125mL	250mL	~~120mL~~ 125 cc	250mL	60mL	250mL	125mL	60ml
		See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081; ~~Chloro-Herbicides - CPA8151~~	See item (3) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	NO2/NO3 - 353.2	VOA 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time									
J03706 3fb	SOIL	7/11/05	0929	X	X	X	X	X	X	X	X	X
J03707 Afb	SOIL	↓	1056	X	X	X	X	X	X		X	X
J03708 81	SOIL	↓	0906	X	X	X	X	X	X	X	X	X
~~J03709~~ ~~CS~~	~~7/11/05 SOIL~~											
~~J03D20~~ ~~CF~~	~~7/11/05 SOIL~~											

SEE NOTE BELOW FOR VOA

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
CTRICE/CTRICE	7/11/05 1145	[signature]	7/11/05 1145
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	7/11/05 1145	Fed EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED EX	07/12/05	[signature]	07/12/05
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; ~~Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 - Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238};~~ Total Uranium

(2) ICP Metals - 6010TR (SW846) {~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}; Mercury - 7471 - (CV)

(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

Note.
DO NOT RUN VOA Bottles

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-13		DATA PACKAGE:	H3258	
VALIDATOR:	TLF	LAB:	EKS	DATE:	8/19/03
			SDG:	H3258	
ANALYSES PERFORMED					
Gross Alpha/Beta Total Uranium	Strontium-90 Radium-22	Technetium-99 Tritium	Alpha Spectroscopy	Gamma Spectroscopy	
SAMPLES/MATRIX					
J03706	J03707	J03708			
				soil	

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

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4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

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_____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... (Yes) No N/A

Method blank results acceptable? ..... (Yes) No N/A

Analytes detected in method blank? ..... Yes (No) N/A

Field blank(s) analyzed? ..... (Yes) No N/A

Field blank results acceptable? ..... Yes (No) N/A

Analytes detected in field blank(s)? ..... (Yes) No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No (N/A)

Comments:

FB gr-d, gr-b, tot Uranium, K-40, Th 228 & 232
+ Ra-226 & 228

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... (Yes) No N/A

LCS/BSS recoveries acceptable? ..... (Yes) No N/A

LCS/BSS traceable? (Levels D,E) ..... Yes No (N/A)

LCS/BSS expired? (Levels D,E) ..... Yes No (N/A)

LCS/BSS levels correct? (Levels D,E) ..... Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E) ..... Yes No (N/A)

Comments:

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

Chemical carrier traceable? (Levels D, E) ..... Yes No N/A

Chemical carrier expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

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8. Tracer Recovery (Levels C, D, E) ..... ☒ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

Tracer traceable? (Levels D, E) ..... Yes No N/A

Tracer expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

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9. Matrix Spikes (Levels C, D, E) ..... ☒ N/A

Matrix spike analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Spike source traceable? (Levels D, E) ..... Yes No N/A

Spike source expired? Levels D, E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

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_____

_____

10. Duplicates (Levels C, D, E) ☐ N/A

Duplicates Analyzed at required frequency? Yes No N/A

RPD Values Acceptable? Yes No N/A

Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments: th 232 - J all 3590

11. Field QC Samples (Levels C, D E) ☐ N/A

Field duplicate sample(s) analyzed? Yes No N/A

Field duplicate RPD values acceptable? Yes No N/A

Field split sample(s) analyzed? Yes No N/A

Field split RPD values acceptable? Yes No N/A

Performance audit sample(s) analyzed? Yes No N/A

Performance audit sample results acceptable? Yes No N/A

Comments: no field QC

12. Holding Times (All levels)

Are sample holding times acceptable? Yes No N/A

Comments:

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses? (Yes) No N/A

Results supported in raw data?(Levels D, E) Yes No (N/A)

Results Acceptable? (Levels D, E) Yes No (N/A)

Transcription/Calculation errors? (Levels D, E) Yes No (N/A)

MDA's meet required detection limits? Yes (No) N/A

Transcription/calculation errors? (Levels D, E) Yes No (N/A)

Comments: G mn

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-05 **Method Blank**

METHOD BLANK

SDG 7860	Client/Case no Hanford	SDG H3258	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R507075-05	Client sample id Method Blank		
Dept sample id 7860-005	Material/Matrix	SOLID	
	SAF No B03-015		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-1.30	1.4	4.1	10	U	93A
Gross Beta	12587-47-2	0.418	3.3	5.6	15	U	93B
Total Uranium (ug/g)	7440-61-1	0	0.004	0.010	1.0	U	U_T
Potassium 40	13966-00-2	U		0.38		U	GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Radium 226	13982-63-3	U		0.046	0.10	U	GAM
Radium 228	15262-20-1	U		0.10	0.20	U	GAM
Europium 152	14683-23-9	U		0.055	0.10	U	GAM
Europium 154	15585-10-1	U		0.066	0.10	U	GAM
Europium 155	14391-16-3	U		0.058	0.10	U	GAM
Thorium 228	14274-82-9	U		0.034		U	GAM
Thorium 232	TH-232	U		0.10		U	GAM
Uranium 235	15117-96-1	U		0.092		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Americium 241	14596-10-2	U		0.077		U	GAM

Remaining Sites Confrm.Sampling-Soil

QC-BLANK 53597

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 07/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7860

Contact Melissa C. Mannion

Client/Case no Hanford SDG H3258

Contract No. 630

Lab sample id R507075-04

Dept sample id 7860-004

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B03-015

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	161	15	3.8	10		93A	214	8.6	75	74-126	70-130
Gross Beta	196	10	5.6	15		93B	200	8.0	98	76-124	70-130
Total Uranium (ug/g)	33.2	3.9	0.10	1.0		U_T	33.0	1.3	101	77-123	80-120
Cobalt 60	0.724	0.083	0.041	0.050		GAM	0.701	0.028	103	70-130	80-120
Cesium 137	0.732	0.078	0.062	0.10		GAM	0.719	0.029	102	71-129	80-120

Remaining Sites Confrm.Sampling-Soil

QC-LCS 53596

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 07/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-06 J03708

DUPLICATE

SDG 7860 Client/Case no Hanford SDG H3258

Contact Melissa C. Mannion Contract No. 630

DUPLICATE		ORIGINAL			
Lab sample id	R507075-06	Lab sample id	R507075-03	Client sample id	J03708
Dept sample id	7860-006	Dept sample id	7860-003	Location/Matrix	100-D-13 SOLID
		Received	07/12/05	Collected/Weight	07/11/05 09:06 1437 g
% solids	100.0	% solids	100.0	Custody/SAF No	B03-015-302 B03-015

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	3.32	1.9	1.7	10		93A	2.70	1.9	2.6		21	140
Gross Beta	3.11	3.3	5.4	15	U	93B	5.51	3.3	5.3		56	166
Total Uranium (ug/g)	0.558	0.062	0.010	1.0		U_T	0.554	0.062	0.010		1	30
Potassium 40	4.62	0.58	0.30			GAM	4.15	0.45	0.34		11	41
Cobalt 60	U		0.035	0.050	U	GAM	U		0.032	U	-	
Cesium 137	U		0.029	0.10	U	GAM	U		0.028	U	-	
Radium 226	0.141	0.065	0.069	0.10		GAM	0.104	0.044	0.052		30	101
Radium 228	0.283	0.11	0.11	0.20		GAM	0.198	0.097	0.11		35	97
Europium 152	U		0.061	0.10	U	GAM	U		0.088	U	-	
Europium 154	U		0.10	0.10	U	GAM	U		0.11	U	-	
Europium 155	U		0.11	0.10	U	GAM	U		0.057	U	-	
Thorium 228	0.245	0.051	0.052			GAM	0.249	0.043	0.037		2	52
Thorium 232	0.283	0.11	0.11			GAM	0.198	0.097	0.11		35	97
Uranium 235	U		0.11		U	GAM	U		0.094	U	-	
Uranium 238	U		3.4		U	GAM	U		3.8	U	-	
Americium 241	U		0.11		U	GAM	U		0.040	U	-	

Remaining Sites Confrm.Sampling-Soil

QC-DUP#3 53598

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 07/22/05

Date: 25 August 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Soil – Waste Site 100-D-13
Subject: Pesticide/PCB - Data Package No. H3258-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3258-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J03706	7/11/05	Soil	C	See note 1
J03707	7/11/05	Soil	C	See note 1
J03708	7/11/05	Soil	C	See note 1

1 - PCBs by 8082 and pesticides by 8081A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all

associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

· **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

One equipment blank (J03708) was submitted for analysis. No analytes were detected in the equipment blank.

· **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of an LCS, matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All toxaphene results exceeded the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data Package No. H3258-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of an LCS, matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All toxaphene results exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: H3258	REVIEWER: TLI	Project: 100-D-13	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS analysis

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PESTICIDE/PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD							
Laboratory: LLI	SDG: H3258						
Sample Number		J03706		J03707		J03708	
Remarks						E. Blank	
Sample Date		7/11/05		7/11/05		7/11/05	
Extraction Date		7/13/05		7/13/05		7/13/05	
Analysis Date		7/18/05		7/18/05		7/19/05	
PCB/Pesticide	RQL	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	13	U	14	U	13	U
Aroclor-1221	20	13	U	14	U	13	U
Aroclor-1232	20	13	U	14	U	13	U
Aroclor-1242	20	13	U	14	U	13	U
Aroclor-1248	20	13	U	14	U	13	U
Aroclor-1254	20	13	U	14	U	13	U
Aroclor-1260	20	13	U	14	U	13	U
Sample Date		7/11/05		7/11/05		7/11/05	
Extraction Date		7/13/05		7/13/05		7/13/05	
Analysis Date		7/18/05		7/18/05		7/18/05	
Alpha-BHC	20	1.7	U	1.8	U	1.7	U
Beta-BHC	20	1.7	U	1.8	U	1.7	U
Delta-BHC	20	1.7	U	1.8	U	1.7	U
Gamma-BHC (Lindane)	20	1.7	U	1.8	U	1.7	U
Heptachlor	20	1.7	U	1.8	U	1.7	U
Aldrin	20	1.7	U	1.8	U	1.7	U
Heptachlor Epoxide	20	1.7	U	1.8	U	1.7	U
Endosulfan I	20	1.7	U	1.8	U	1.7	U
Dieldrin	20	1.7	U	1.8	U	1.7	U
4,4'-DDE	20	3.3	U	3.6	U	3.3	U
Endrin	20	3.3	U	3.6	U	3.3	U
Endosulfan II	20	3.3	U	3.6	U	3.3	U
4,4'-DDD	20	3.3	U	3.6	U	3.3	U
Endosulfan Sulfate	20	3.3	U	3.6	U	3.3	U
4,4'-DDT	20	3.3	U	3.6	U	3.3	U
Methoxychlor	20	17	U	18	U	17	U
Endrin Ketone	20	3.3	U	3.6	U	3.3	U
Endrin Aldehyde	20	3.3	U	3.6	U	3.3	U
alpha-Chlordane	20	1.7	U	1.8	U	1.7	U
gamma-Chlordane	20	1.7	U	1.8	U	1.7	U
Toxaphene	20	170	UJ	180	UJ	170	UJ

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 07/20/05 09:28

RFW Batch Number: 0507L936 Client: TNUHANFORD B03-015 H3258 Work Order: 11343606001 Page: 1

	Cust ID:	J03706	J03707	J03707	J03707	J03708	PBLKPH
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	05LE0577-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		43 %	55 %	62 %	62 %	59 %	50 %
Decachlorobiphenyl		55 %	68 %	79 %	74 %	60 %	54 %
Aroclor-1016		13 U	14 U	101 %	99 %	13 U	13 U
Aroclor-1221		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1232		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1242		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1248		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1254		13 U	14 U	14 U	14 U	13 U	13 U
Aroclor-1260		13 U	14 U	89 %	85 %	13 U	13 U

	Cust ID:	PBLKPH BS
Sample Information	RFW#:	05LE0577-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate: Tetrachloro-m-xylene		66 %
Decachlorobiphenyl		72 %
Aroclor-1016		105 %
Aroclor-1221		13 U
Aroclor-1232		13 U
Aroclor-1242		13 U
Aroclor-1248		13 U
Aroclor-1254		13 U
Aroclor-1260		87 %

000011

8/24/05 8/27/05

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List
Report Date: 07/19/05 12:52

RFW Batch Number: 0507L936 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 1

	Cust ID:	J03706	J03707	J03707	J03707	J03708	PBLKPH
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	05LE0577-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	68 %	77 %	77 %	69 %	70 %	67 %
	Tetrachloro-m-xylene	63 %	70 %	72 %	60 %	65 %	70 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	1.8 U	124 %	122 %	1.7 U	1.7 U
Beta-BHC		1.7 U	1.8 U	120 %	118 %	1.7 U	1.7 U
Delta-BHC		1.7 U	1.8 U	116 %	120 %	1.7 U	1.7 U
gamma-BHC (Lindane)		1.7 U	1.8 U	124 %	119 %	1.7 U	1.7 U
Heptachlor		1.7 U	1.8 U	117 %	112 %	1.7 U	1.7 U
Aldrin		1.7 U	1.8 U	119 %	116 %	1.7 U	1.7 U
Heptachlor epoxide		1.7 U	1.8 U	115 %	117 %	1.7 U	1.7 U
Endosulfan I		1.7 U	1.8 U	115 %	108 %	1.7 U	1.7 U
Dieldrin		1.7 U	1.8 U	120 %	121 %	1.7 U	1.7 U
4,4'-DDE		3.3 U	3.6 U	122 * %	119 %	3.3 U	3.3 U
Endrin		3.3 U	3.6 U	125 %	119 %	3.3 U	3.3 U
Endosulfan II		3.3 U	3.6 U	120 %	110 %	3.3 U	3.3 U
4,4'-DDD		3.3 U	3.6 U	117 %	112 %	3.3 U	3.3 U
Endosulfan sulfate		3.3 U	3.6 U	120 %	119 %	3.3 U	3.3 U
4,4'-DDT		3.3 U	3.6 U	118 %	117 %	3.3 U	3.3 U
Methoxychlor		17 U	18 U	116 %	114 %	17 U	17 U
Endrin ketone		3.3 U	3.6 U	122 %	123 %	3.3 U	3.3 U
Endrin aldehyde		3.3 U	3.6 U	103 %	106 %	3.3 U	3.3 U
alpha-Chlordane		1.7 U	1.8 U	121 %	110 %	1.7 U	1.7 U
gamma-Chlordane		1.7 U	1.8 U	116 %	112 %	1.7 U	1.7 U
Toxaphene		170 UJ	180 UJ	180 U	180 U	170 UJ	170 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

000012

7/24/05

7/27/05

Cust ID: PBLKPH BS

Sample Information
RFW#: 05LE0577-MB1
Matrix: SOIL
D.F.: 1.00
Units: UG/KG

Surrogate:	Decachlorobiphenyl	82	%
	Tetrachloro-m-xylene	75	%

Alpha-BHC	126		%
Beta-BHC	120		%
Delta-BHC	120		%
gamma-BHC (Lindane)	120		%
Heptachlor	115		%
Aldrin	113		%
Heptachlor epoxide	114		%
Endosulfan I	117		%
Dieldrin	118		%
4,4'-DDE	123	*	%
Endrin	125		%
Endosulfan II	114		%
4,4'-DDD	117		%
Endosulfan sulfate	122	*	%
4,4'-DDT	120		%
Methoxychlor	120		%
Endrin ketone	121		%
Endrin aldehyde	106		%
alpha-Chlordane	111		%
gamma-Chlordane	117		%
Toxaphene	170		U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LvLI
LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B03-015
LVL #: 0507L936
SDG/SAF # H3258/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 07-12-2005

CHLORINATED PESTICIDES

Three (3) soil samples were collected on 07-11-2005.

The samples and their associated QC samples were extracted on 07-13-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 07-18-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. Two (2) of twenty (20) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. One (1) forty (40) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

9/26/05
Date

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

som\r:\group\data\pest\tnu hanford\0507-936.pes

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

AAAAAAA2

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0506345

Initiator: M. McNally
Date: 7/19/05
Client: TRC - Hanford

Batch: 05071936
Samples: m2, m3
Method: SW846/MCAWW/CLP/

Parameter: 060114
Matrix: Soil
Prep Batch: 05050577

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

- ms high for DDE @ 122% (range: 60 - 120).
- ms high for DDE @ 123% & endrin ketone @ 122% (range: 60 - 120).
- msd was ac. no hit in samples.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

report + narrate

4. Project Manager Instructions...signature/date: _____ 7/19/05

√ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____ Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
C	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-In: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B03-015
LVL #: 0507L936
SDG/SAF # H3258/B03-015

W.O. #: 11343-606-001-9999-00
Date Received: 07-12-2005

PCB

Three (3) soil samples were collected on 07-11-2005.

The samples and their associated QC samples were extracted on 07-13-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 07-18,19-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received Silica Gel, Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3630C, 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.
11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/20/05
Date

som\r:\group\data\pest\tnu hanford\0507-936.pcb

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

05076936

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-302	Page 1 of 1

Collector: Stankovich/Gale
Company Contact: Lorna Dittmer — **Telephone No.** (509) 376-9664
Project Coordinator: KESSNER, JH
Price Code: 8C
Data Turnaround: 7/15 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil
Sampling Location: 100-D-13
SAF No.: B03-015
Air Quality:
Ice Chest No.: ERC-96-006
Field Logbook No.: EL-1578-7
COA: C00D136700
Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES / LIONVILLE
Offsite Property No.: A050279
Bill of Lading/Air Bill No.: See OSR C

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: COOL 4°C

000018

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4°C
Type of Container	G/P	G/P E	G/P	aG B	G/P D	aG A	G	G F	G/P G	G C
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	1000mL	250mL	125mL	250mL	~~120mL~~ 125 cc	250mL	60mL	250mL	125mL	60ml
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081; ~~Chloro Herbicides - EPA8151~~	See item (3) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	NO2/NO3 - 353.2	VOA 8260A (TCL)

	Sample No.	Matrix *	Sample Date	Sample Time										
1	J03706 3 ft	SOIL	7/11/05	0929	X	X	X	X	X	X	X	X	X	X
2	J03707 8 ft	SOIL	↓	1056	X	X	X	X	X	X		X	X	X
3	J03708 81	SOIL	↓	0906	X	X	X	X	X	X	X	X	X	X
	~~J03709~~ CT 7/11/05	~~SOIL~~												
	~~J03D20~~ CT 7/11/05	~~SOIL~~					SEE NOTE BELOW FOR VOA							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Chico / CTRICE	7/11/05 1145	PAST JOHN	7/11/05 1145
PAST JOHNER	7/11/05 1145	Fed Ex	
Fed Ex	7-12-05 1015	[signature]	7-12-05 1015

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; ~~Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 - Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}~~; Total Uranium
(2) ICP Metals - 6010TR (SW846) {~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}; Mercury - 7471 - (CV)
(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

Note.
DO NOT RUN VOA Bottles

Matrix *: S=Soil, SE=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-13			DATA PACKAGE: H3258		
VALIDATOR: TLI		LAB: LLI		DATE: 8/19/05	
			SDG: H3258		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J03706 J03707 J03708					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

DDT and endrin breakdowns acceptable? ..... Yes No N/A

Comments: _____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: ~~Nitrate + Sulfate in~~ ES 8/17/05

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... Yes No N/A
Surrogate recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: no PAS

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... (Yes) No N/A
Duplicate results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
Field duplicate RPD values acceptable? ..... Yes No (N/A)
Field split RPD values acceptable? ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No (N/A)
Positive results resolved acceptably? ..... Yes No (N/A)

Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A
Sample holding times acceptable? ..... (Yes) No N/A

Comments: _____

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) .... Yes No N/A

Compound quantitation acceptable? (Levels D, E) .... Yes No N/A

Results reported for all requested analyses? .... Yes No N/A

Results supported in the raw data? (Levels D, E) .... Yes No N/A

Samples properly prepared? (Levels D, E) .... Yes No N/A

Detection limits meet RDL? .... Yes No N/A

Transcription/calculation errors? (Levels D, E) .... Yes No N/A

Comments: toxaphene ~~+~~ over

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? .... Yes No N/A

Lot check performed? .... Yes No N/A

Check recoveries acceptable? .... Yes No N/A

GPC cleanup performed? .... Yes No N/A

GPC check performed? .... Yes No N/A

GPC check recoveries acceptable? .... Yes No N/A

GPC calibration performed? .... Yes No N/A

GPC calibration check performed? .... Yes No N/A

GPC calibration check retention times acceptable? .... Yes No N/A

Check/calibration materials traceable? .... Yes No N/A

Check/calibration materials Expired? .... Yes No N/A

Analytical batch QC given similar cleanup? .... Yes No N/A

Transcription/Calculation Errors? .... Yes No N/A

Comments:

SAF-B03-015
Remaining Sites Confirmation
Sampling-Soil
FINAL DATA PACKAGE

MAIL COMPLETE COPY OF DATA PACKAGE TO:

Bob Hynes	X0-17	NB 8-29-05 INITIAL/DATE
Jeanette Duncan 1 copy(s) clipped		NB 8-29-05 INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE COVER SHEET)

SDG H3258 **SAF-B03-015**

X Rad only Chem only Rad & Chem

X Complete Partial

Including Add-on Total SR-90

Sample Location/Waste Site: 100-D-13

EBERLINE
SERVICES

August 25, 2005

Ms. Joan Kessner
Bechtel Hanford Inc.
3190 George Washington Way
MSIN H9-02
Richland, WA 99352

Reference: **P.O. #630**
Eberline Services R5-07-075-7860, SDG H3258, Revised
R5-08-080-7860

Dear Ms. Kessner:

Enclosed is the revised data report for three solid samples designated under SAF No. B03-015 received at Eberline Services on July 12, 2005. The samples were analyzed according to the accompanying chain-of-custody document. The results were originally reported on July 22, 2005.

BHI on August 8, 2005 requested a total strontium analysis on sample J03707.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

MCM/

Enclosure: Data Package

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H3258 was composed of three solid (soil) samples designated under SAF No. B03-015 with a Project Designation of: Remaining Sites Confirmation Sampling-Soil and a Sampling Location of: 100-D-13.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-mail on July 22, 2005 and August 22, 2005.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.3 Total Uranium Analysis

No problems were encountered during the course of the analyses.

2.4 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion
Senior Program Manager

8/25/5
Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3258

SDG	7860
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H3258

SUMMARY DATA SECTION

TABLE OF CONTENTS

Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

SDG 7860
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H3258

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/22/05

SDG 7860
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H3258

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

SAMPLE SUMMARY

SDG 7860
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H3258

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J03706	100-D-13	SOLID		R507075-01	B03-015	B03-015-302	07/11/05 09:29
J03707	100-D-13	SOLID		R507075-02	B03-015	B03-015-302	07/11/05 10:50
J03708	100-D-13	SOLID		R507075-03	B03-015	B03-015-302	07/11/05 09:06
Method Blank		SOLID		R507075-05	B03-015		
Method Blank		SOLID		R507075-08	B03-015		
Lab Control Sample		SOLID		R507075-04	B03-015		
Lab Control Sample		SOLID		R507075-07	B03-015		
Duplicate (R507075-02)	100-D-13	SOLID		R507075-09	B03-015		07/11/05 10:50
Duplicate (R507075-03)	100-D-13	SOLID		R507075-06	B03-015		07/11/05 09:06

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SDG 7860
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H3258

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H3258

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS RECEIVED	DAYS COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7860	B03-015-302	J03706	SOLID	99.3	1285 g		07/12/05	1	R507075-01	7860-001
		J03707	SOLID	96.3	1428 g		07/12/05	1	R507075-02	7860-002
		J03708	SOLID	100.0	1437 g		07/12/05	1	R507075-03	7860-003
		Method Blank	SOLID						R507075-05	7860-005
		Method Blank	SOLID						R507075-08	7860-008
		Lab Control Sample	SOLID						R507075-04	7860-004
		Lab Control Sample	SOLID						R507075-07	7860-007
		Duplicate (R507075-02)	SOLID	96.3	1428 g		07/12/05	1	R507075-09	7860-009
		Duplicate (R507075-03)	SOLID	100.0	1437 g		07/12/05	1	R507075-06	7860-006

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

PREP BATCH SUMMARY

SDG 7860
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H3258

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Beta Counting												
SR	SOLID	Total Strontium in Solids	7140-113	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Solids	7140-113	20.0	3			1	1	1/1		
93B	SOLID	Gross Beta in Solids	7140-113	15.0	3			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7140-113	15.0	3			1	1	1/1		
Kinetic Phosphorimetry (KPA)												
U_T	SOLID	Uranium, Total in Solids	7140-113	9.0	3			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

WORK SUMMARY

SDG 7860
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H3258

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
J03706			R507075-01	7860-001	93A/93		07/19/05	07/20/05	MWT	Gross Alpha in Solids
100-D-13		SOLID	07/11/05	7860-001	93B/93		07/19/05	07/20/05	MWT	Gross Beta in Solids
B03-015-302	B03-015		07/12/05	7860-001	GAM		07/18/05	07/21/05	CSS	Gamma Scan
				7860-001	U_T		07/20/05	07/21/05	MWT	Uranium, Total in Solids
J03707			R507075-02	7860-002	93A/93		07/19/05	07/20/05	MWT	Gross Alpha in Solids
100-D-13		SOLID	07/11/05	7860-002	93B/93		07/19/05	07/20/05	MWT	Gross Beta in Solids
B03-015-302	B03-015		07/12/05	7860-002	GAM		07/18/05	07/21/05	CSS	Gamma Scan
				7860-002	SR		08/10/05	08/19/05	MWT	Total Strontium in Solids
				7860-002	U_T		07/20/05	07/21/05	MWT	Uranium, Total in Solids
J03708			R507075-03	7860-003	93A/93		07/19/05	07/20/05	MWT	Gross Alpha in Solids
100-D-13		SOLID	07/11/05	7860-003	93B/93		07/19/05	07/20/05	MWT	Gross Beta in Solids
B03-015-302	B03-015		07/12/05	7860-003	GAM		07/18/05	07/21/05	CSS	Gamma Scan
				7860-003	U_T		07/20/05	07/21/05	MWT	Uranium, Total in Solids
Method Blank			R507075-05	7860-005	93A/93		07/19/05	07/20/05	MWT	Gross Alpha in Solids
		SOLID		7860-005	93B/93		07/19/05	07/20/05	MWT	Gross Beta in Solids
	B03-015			7860-005	GAM		07/19/05	07/21/05	CSS	Gamma Scan
				7860-005	U_T		07/20/05	07/21/05	MWT	Uranium, Total in Solids
Method Blank			R507075-08	7860-008	SR		08/10/05	08/19/05	MWT	Total Strontium in Solids
		SOLID								
	B03-015									
Lab Control Sample			R507075-04	7860-004	93A/93		07/19/05	07/20/05	MWT	Gross Alpha in Solids
		SOLID		7860-004	93B/93		07/19/05	07/20/05	MWT	Gross Beta in Solids
	B03-015			7860-004	GAM		07/18/05	07/21/05	CSS	Gamma Scan
				7860-004	U_T		07/20/05	07/21/05	MWT	Uranium, Total in Solids
Lab Control Sample			R507075-07	7860-007	SR		08/10/05	08/19/05	MWT	Total Strontium in Solids
		SOLID								
	B03-015									
Duplicate (R507075-02)			R507075-09	7860-009	SR		08/10/05	08/19/05	MWT	Total Strontium in Solids
100-D-13		SOLID	07/11/05							
	B03-015		07/12/05							

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/22/05

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R507075-03)			R507075-06	7860-006	93A/93		07/19/05	07/20/05	MWT	Gross Alpha in Solids
100-D-13		SOLID	07/11/05	7860-006	93B/93		07/19/05	07/20/05	MWT	Gross Beta in Solids
	B03-015		07/12/05	7860-006	GAM		07/21/05	07/21/05	CSS	Gamma Scan
				7860-006	U_T		07/20/05	07/21/05	MWT	Uranium, Total in Solids

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B03-015	Gross Alpha in Solids	900.0_ALPHABETA_GPC	3			1	1	1	6
93B/93	B03-015	Gross Beta in Solids	900.0_ALPHABETA_GPC	3			1	1	1	6
GAM	B03-015	Gamma Scan	GAMMA_GS	3			1	1	1	6
SR	B03-015	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
U_T	B03-015	Uranium, Total in Solids	UTOT_KPA	3			1	1	1	6
TOTALS				13			5	5	5	28

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-05 **Method Blank**

METHOD BLANK

SDG 7860	Client/Case no Hanford	SDG H3258	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R507075-05	Client sample id Method Blank		
Dept sample id 7860-005	Material/Matrix	SOLID	
	SAF No B03-015		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-1.30	1.4	4.1	10	U	93A
Gross Beta	12587-47-2	0.418	3.3	5.6	15	U	93B
Total Uranium (ug/g)	7440-61-1	0	0.004	0.010	1.0	U	U_T
Potassium 40	13966-00-2	U		0.38		U	GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Radium 226	13982-63-3	U		0.046	0.10	U	GAM
Radium 228	15262-20-1	U		0.10	0.20	U	GAM
Europium 152	14683-23-9	U		0.055	0.10	U	GAM
Europium 154	15585-10-1	U		0.066	0.10	U	GAM
Europium 155	14391-16-3	U		0.058	0.10	U	GAM
Thorium 228	14274-82-9	U		0.034		U	GAM
Thorium 232	TH-232	U		0.10		U	GAM
Uranium 235	15117-96-1	U		0.092		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Americium 241	14596-10-2	U		0.077		U	GAM

Remaining Sites Confrm.Sampling-Soil

QC-BLANK 53597

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-08 **Method Blank**

METHOD BLANK

SDG	7860	Client/Case no	Hanford	SDG H3258	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R507075-08	Client sample id	Method Blank		
Dept sample id	7860-008	Material/Matrix		SOLID	
		SAF No	B03-015		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.028	0.41	0.86	1.0	U	SR

Remaining Sites Confrm.Sampling-Soil

QC-BLANK 53957

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-04 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7860 Client/Case no Hanford SDG H3258

Contact Melissa C. Mannion Contract No. 630

Lab sample id R507075-04 Client sample id Lab Control Sample

Dept sample id 7860-004 Material/Matrix SOLID

SAF No B03-015

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	161	15	3.8	10		93A	214	8.6	75	74-126	70-130
Gross Beta	196	10	5.6	15		93B	200	8.0	98	76-124	70-130
Total Uranium (ug/g)	33.2	3.9	0.10	1.0		U_T	33.0	1.3	101	77-123	80-120
Cobalt 60	0.724	0.083	0.041	0.050		GAM	0.701	0.028	103	70-130	80-120
Cesium 137	0.732	0.078	0.062	0.10		GAM	0.719	0.029	102	71-129	80-120

Remaining Sites Confrm.Sampling-Soil

QC-LCS 53596

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-07 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7860 Client/Case no Hanford SDG H3258

Contact Melissa C. Mannion Contract No. 630

Lab sample id R507075-07 Client sample id Lab Control Sample

Dept sample id 7860-007 Material/Matrix SOLID

SAF No B03-015

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	35.1	1.8	0.73	1.0		SR	33.2	1.3	106	81-119	80-120

Remaining Sites Confrm.Sampling-Soil

QC-LCS 53956

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-09 J03707

DUPLICATE

SDG	7860			Client/Case no	Hanford SDG H3258
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R507075-09	Lab sample id	R507075-02	Client sample id	J03707
Dept sample id	7860-009	Dept sample id	7860-002	Location/Matrix	100-D-13 SOLID
		Received	07/12/05	Collected/Weight	07/11/05 10:50 1428 g
% solids	96.3	% solids	96.3	Custody/SAF No	B03-015-302 B03-015

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Total Strontium	-0.587	0.85	1.9	1.0	U	SR	0.232	0.54	1.1	U	-	

Remaining Sites Confrm.Sampling-Soil

QC-DUP#2 53958

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-06 J03708

DUPLICATE

SDG 7860 Client/Case no Hanford SDG H3258

Contact Melissa C. Mannion Contract No. 630

DUPLICATE		ORIGINAL			
Lab sample id	R507075-06	Lab sample id	R507075-03	Client sample id	J03708
Dept sample id	7860-006	Dept sample id	7860-003	Location/Matrix	100-D-13 SOLID
		Received	07/12/05	Collected/Weight	07/11/05 09:06 1437 g
% solids	100.0	% solids	100.0	Custody/SAF No	B03-015-302 B03-015

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	3.32	1.9	1.7	10		93A	2.70	1.9	2.6		21	140
Gross Beta	3.11	3.3	5.4	15	U	93B	5.51	3.3	5.3		56	166
Total Uranium (ug/g)	0.558	0.062	0.010	1.0		U_T	0.554	0.062	0.010		1	30
Potassium 40	4.62	0.58	0.30			GAM	4.15	0.45	0.34		11	41
Cobalt 60	U		0.035	0.050	U	GAM	U		0.032	U	-	
Cesium 137	U		0.029	0.10	U	GAM	U		0.028	U	-	
Radium 226	0.141	0.065	0.069	0.10		GAM	0.104	0.044	0.052		30	101
Radium 228	0.283	0.11	0.11	0.20		GAM	0.198	0.097	0.11		35	97
Europium 152	U		0.061	0.10	U	GAM	U		0.088	U	-	
Europium 154	U		0.10	0.10	U	GAM	U		0.11	U	-	
Europium 155	U		0.11	0.10	U	GAM	U		0.057	U	-	
Thorium 228	0.245	0.051	0.052			GAM	0.249	0.043	0.037		2	52
Thorium 232	0.283	0.11	0.11			GAM	0.198	0.097	0.11		35	97
Uranium 235	U		0.11		U	GAM	U		0.094	U	-	
Uranium 238	U		3.4		U	GAM	U		3.8	U	-	
Americium 241	U		0.11		U	GAM	U		0.040	U	-	

Remaining Sites Confrm.Sampling-Soil

QC-DUP#3 53598

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/22/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-01 **J03706**

DATA SHEET

SDG 7860	Client/Case no Hanford	SDG H3258	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R507075-01	Client sample id J03706		
Dept sample id 7860-001	Location/Matrix 100-D-13	SOLID	
Received 07/12/05	Collected/Weight 07/11/05 09:29	1285 g	
% solids 99.3	Custody/SAF No B03-015-302	B03-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	7.45	3.7	3.0	10		93A
Gross Beta	12587-47-2	17.8	4.2	5.6	15		93B
Total Uranium (ug/g)	7440-61-1	1.42	0.16	0.010	1.0		U_T
Potassium 40	13966-00-2	9.28	0.60	0.32			GAM
Cobalt 60	10198-40-0	U		0.038	0.050	U	GAM
Cesium 137	10045-97-3	0.200	0.039	0.040	0.10		GAM
Radium 226	13982-63-3	0.377	0.076	0.078	0.10		GAM
Radium 228	15262-20-1	0.685	0.19	0.19	0.20		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	0.904	0.11	0.086			GAM
Thorium 232	TH-232	0.685	0.19	0.19			GAM
Uranium 235	15117-96-1	U		0.21		U	GAM
Uranium 238	U-238	U		4.9		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM

Remaining Sites Confrm.Sampling-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/22/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-02 J03707

DATA SHEET

SDG	7860	Client/Case no	Hanford SDG H3258
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R507075-02	Client sample id	J03707
Dept sample id	7860-002	Location/Matrix	100-D-13 SOLID
Received	07/12/05	Collected/Weight	07/11/05 10:50 1428 g
% solids	96.3	Custody/SAF No	B03-015-302 B03-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	8.47	3.7	3.9	10		93A
Gross Beta	12587-47-2	29.3	4.8	5.7	15		93B
Total Strontium	SR-RAD	0.232	0.54	1.1	1.0	U	SR
Total Uranium (ug/g)	7440-61-1	1.50	0.17	0.010	1.0		U_T
Potassium 40	13966-00-2	11.7	0.83	0.29			GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	U		0.037	0.10	U	GAM
Radium 226	13982-63-3	0.470	0.084	0.079	0.10		GAM
Radium 228	15262-20-1	0.507	0.19	0.21	0.20		GAM
Europium 152	14683-23-9	U		0.092	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	0.563	0.045	0.044			GAM
Thorium 232	TH-232	0.507	0.19	0.21			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		5.3		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

Remaining Sites Confrm.Sampling-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/22/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H3258

R507075-03 J03708

DATA SHEET

SDG	7860	Client/Case no	Hanford SDG H3258
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R507075-03	Client sample id	J03708
Dept sample id	7860-003	Location/Matrix	100-D-13 SOLID
Received	07/12/05	Collected/Weight	07/11/05 09:06 1437 g
% solids	100.0	Custody/SAF No	B03-015-302 B03-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	2.70	1.9	2.6	10		93A
Gross Beta	12587-47-2	5.51	3.3	5.3	15		93B
Total Uranium (ug/g)	7440-61-1	0.554	0.062	0.010	1.0		U_T
Potassium 40	13966-00-2	4.15	0.45	0.34			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Radium 226	13982-63-3	0.104	0.044	0.052	0.10		GAM
Radium 228	15262-20-1	0.198	0.097	0.11	0.20		GAM
Europium 152	14683-23-9	U		0.088	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.057	0.10	U	GAM
Thorium 228	14274-82-9	0.249	0.043	0.037			GAM
Thorium 232	TH-232	0.198	0.097	0.11			GAM
Uranium 235	15117-96-1	U		0.094		U	GAM
Uranium 238	U-238	U		3.8		U	GAM
Americium 241	14596-10-2	U		0.040		U	GAM

Remaining Sites Confrm.Sampling-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

Test SR Matrix SOLID
SDG 7860
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H3258

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7140-113					
J03707	R507075-02			7860-002	U
BLK (QC ID=53957)	R507075-08			7860-008	U
LCS (QC ID=53956)	R507075-07			7860-007	ok
Duplicate (R507075-02)	R507075-09			7860-009	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
Remaining Sites Confrm.Sampling-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7140-113	2σ prep error 10.0 %			Reference Lab Notebook #7140, pg. 113												
J03707	R507075-02			1.1	0.300			81	100				30	08/10/05	08/10	GRB-217
BLK (QC ID=53957)	R507075-08			0.86	0.300			87	100					08/10/05	08/10	GRB-230
LCS (QC ID=53956)	R507075-07			0.73	0.300			92	120					08/10/05	08/10	GRB-217
Duplicate (R507075-02) (QC ID=53958)	R507075-09			1.9	0.300			44	100				30	08/10/05	08/10	GRB-231
Nominal values and limits from method				1.0	0.300			30-105	100				180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-383	Strontium in Dissolved Solid of < 5.0g Aliquot, rev 1

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 1.1 ± 1.0
YIELD 76 ± 44

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

Test 93A Matrix SOLID
SDG 7860
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H3258

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 7140-113					
J03706	R507075-01	93		7860-001	7.45
J03707	R507075-02	93		7860-002	8.47
J03708	R507075-03	93		7860-003	2.70
BLK (QC ID=53597)	R507075-05	93		7860-005	U
LCS (QC ID=53596)	R507075-04	93		7860-004	ok
Duplicate (R507075-03)	R507075-06	93		7860-006	ok

Nominal values and limits from method RDLs (pCi/g) 10
Remaining Sites Confrm.Sampling-Soil

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7140-113	2σ prep error 20.0 %				Reference Lab Notebook #7140, pg. 113											
J03706	R507075-01	93		3.0	0.100			41	100				8	07/19/05	07/19	GRB-209
J03707	R507075-02	93		3.9	0.100			43	100				8	07/19/05	07/19	GRB-210
J03708	R507075-03	93		2.6	0.100			12	100				8	07/19/05	07/19	GRB-211
BLK (QC ID=53597)	R507075-05	93		4.1	0.100			63	100					07/19/05	07/19	GRB-111
LCS (QC ID=53596)	R507075-04	93		3.8	0.100			62	100					07/19/05	07/19	GRB-109
Duplicate (R507075-03) (QC ID=53598)	R507075-06	93		1.7	0.100			8	100				8	07/19/05	07/19	GRB-112
Nominal values and limits from method				10	0.100			5-250	100				180			

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
CP-125 Gross Alpha and Beta in Dissolved Solids, rev 5

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 3.2 ± 1.9
RESIDUE 38 ± 47

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

Test 93B Matrix SOLID
SDG 7860
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H3258

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7140-113						
J03706	R507075-01	93		7860-001	17.8	
J03707	R507075-02	93		7860-002	29.3	
J03708	R507075-03	93		7860-003	5.51	
BLK (QC ID=53597)	R507075-05	93		7860-005	U	
LCS (QC ID=53596)	R507075-04	93		7860-004	ok	
Duplicate (R507075-03)	R507075-06	93		7860-006	ok	U
Nominal values and limits from method				RDLs (pCi/g)	15	
Remaining Sites Confrm.Sampling-Soil						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7140-113 2σ prep error 15.0 % Reference Lab Notebook #7140, pg. 113																
J03706	R507075-01	93		5.6	0.100			41		100			8	07/19/05	07/19	GRB-209
J03707	R507075-02	93		5.7	0.100			43		100			8	07/19/05	07/19	GRB-210
J03708	R507075-03	93		5.3	0.100			12		100			8	07/19/05	07/19	GRB-211
BLK (QC ID=53597)	R507075-05	93		5.6	0.100			63		100				07/19/05	07/19	GRB-111
LCS (QC ID=53596)	R507075-04	93		5.6	0.100			62		100				07/19/05	07/19	GRB-109
Duplicate (R507075-03) (QC ID=53598)	R507075-06	93		5.4	0.100			8		100			8	07/19/05	07/19	GRB-112
Nominal values and limits from method				15	0.100			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-125	Gross Alpha and Beta in Dissolved Solids, rev 5

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 5.5 ± 0.30
RESIDUE 38 ± 47

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

Test GAM Matrix SOLID
SDG 7860
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H3258

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 7140-113						
J03706	R507075-01			7860-001	U	0.200
J03707	R507075-02			7860-002	U	U
J03708	R507075-03			7860-003	U	U
BLK (QC ID=53597)	R507075-05			7860-005	U	U
LCS (QC ID=53596)	R507075-04			7860-004	ok	ok
Duplicate (R507075-03)	R507075-06			7860-006	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10
Remaining Sites Confrm.Sampling-Soil						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7140-113	2σ prep error 15.0 % Reference Lab Notebook #7140, pg. 113															
J03706	R507075-01			0.33	711					101			7	07/13/05	07/18	02,04,00
J03707	R507075-02			0.33	616					104			7	07/13/05	07/18	MB,05,00
J03708	R507075-03			0.25	723					102			7	07/13/05	07/18	MB,07,00
BLK (QC ID=53597)	R507075-05			0.20	615					108				07/13/05	07/19	01,03,00
LCS (QC ID=53596)	R507075-04			0.041	615					103				07/13/05	07/18	01,03,00
Duplicate (R507075-03) (QC ID=53598)	R507075-06			0.26	723					122			10	07/13/05	07/21	02,03,00
Nominal values and limits from method				0.050 ~~615~~ 615						100			180			

MCM 8/22/5

PROCEDURES	REFERENCE	GAMMA_GS
	CP-061	Determination of Moisture Content in Solid Samples rev 3
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.24 ± 0.21
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/22/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3258

Test U T Matrix SOLID
SDG 7860
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOLIDS
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H3258

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 7140-113					
J03706	R507075-01			7860-001	1.42
J03707	R507075-02			7860-002	1.50
J03708	R507075-03			7860-003	0.554
BLK (QC ID=53597)	R507075-05			7860-005	U
LCS (QC ID=53596)	R507075-04			7860-004	ok
Duplicate (R507075-03)	R507075-06			7860-006	ok
Nominal values and limits from method				RDLs (ug/g)	1.0
Remaining Sites Confrm.Sampling-Soil					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7140-113	2σ prep error 9.0 %	Reference Lab Notebook #7140, pg. 113														
J03706	R507075-01			0.010	0.0500								9	07/20/05	07/20	KPA-001
J03707	R507075-02			0.010	0.0500								9	07/20/05	07/20	KPA-001
J03708	R507075-03			0.010	0.0500								9	07/20/05	07/20	KPA-001
BLK (QC ID=53597)	R507075-05			0.010	0.0500									07/20/05	07/20	KPA-001
LCS (QC ID=53596)	R507075-04			0.10	0.0500									07/20/05	07/20	KPA-001
Duplicate (R507075-03) (QC ID=53598)	R507075-06			0.010	0.0500								9	07/20/05	07/20	KPA-001
Nominal values and limits from method				1.0	0.0500								180			

PROCEDURES	REFERENCE	UTOT_KPA
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 8
	CP-929	Calibration of the Kinetic Phosphorimeter, rev 9

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.025 ± 0.073
YIELD ____ ± ____

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Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/22/05

SDG 7860
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3258

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H3258

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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REPORT GUIDE

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Contract No. 630
Case no SDG_H3258

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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REPORT GUIDE

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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GUIDE, cont.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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Contact Melissa C. Mannion

GUIDE, cont.

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METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/22/05

SDG 7860
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H3258

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-302	Page 1 of 1
Collector: Stankovich/Gale	Company Contact: Lorna Dittmer; Telephone No.: (509) 376-9664	Project Coordinator: KESSNER, JH	Price Code 8C; Data Turnaround 15 Days
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 100-D-13 H3258 (7860)	SAF No.: B03-015	Air Quality [ ]
Ice Chest No.: ERC-99-027	Field Logbook No.: EL-1578-7; COA: C00D136700	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES / RIONVILLE	Offsite Property No.: A050283	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: None

			Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4°C
			Type of Container	G/P	G/P	G/P	aG	G/P	aG	G	G	G/P	G
			No. of Container(s)	1	1	1	1	1	1	1	1	1	
			Volume	1000mL	250mL	125mL	250mL	~~120mL~~ 125 cg	250mL	60mL	250mL	125mL	60ml
SAMPLE ANALYSIS				See item (1) in Special Instructions	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081; ~~Chloro Herbicides - EPA8151~~	See item (3) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	NO2/NO3 - 353.2	VOA 8260A (TCL)
Sample No.	Matrix *	Sample Date	Sample Time										
J03706 SFb	SOIL	7/11/05	0929	X	X	X	X	X	X	X	X	X	X
J03707 Afb	SOIL	↓	1056	X	X	X	X	X	X		X	X	X
J03708 81	SOIL	↓	0906	X	X	X	X	X	X	X	X	X	X
~~J03709~~	~~SOIL~~	~~7/11/05~~											
~~J03D20~~	~~SOIL~~	~~7/11/05~~					SEE NOTE BELOW FOR VOA						

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Chico/CTRICE	7/11/05 1145	Received By/Stored In: DA St. John	7/11/05 1145
Relinquished By/Removed From: DA St. John	7/11/05 1145	Received By/Stored In: Fed EX	
Relinquished By/Removed From: FED EX	07/12/05	Received By/Stored In: MFW	07/12/05
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241} ~~; Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}~~; Total Uranium
(2) ICP Metals - 6010TR (SW846) {~~Aluminum~~, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}; Mercury - 7471 - (CV)
(3) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}

Note.
DO NOT RUN VOA Bottles

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: BECHTEL HANFORD City RICHLAND State WA

Date/Time received 07/12/05 9:30 CoC No. B03-015-302

Container I.D. No. ERC 99-027 Requested TAT (Days) 15 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [X] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [X] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [X] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [X] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [X]
6. Number of samples in shipping container: 3 Sample Matrix S
7. Number of containers per sample: _____ (Or see CoC X)
8. Samples are in correct container Yes [ ] No [ ]
9. Paperwork agrees with samples? Yes [ ] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [ ] pH _____ Preservative _____
13. Describe any anomalies:

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by MEW Date: 07/12/05 Time: 12:30

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. _____ Calibration date _____